



High Reliability Optoelectronics 高信頼性オプトエレクトロニクス

What is High Reliability?

The high reliability market is becoming increasingly complex and challenging. It is driven by the growing demand for cost effectiveness and fuel efficiency.

高信頼性市場はますます複雑化し、厳しい状況になっています。それは、コスト効率と燃費向上に対する需要の高まりによって推進されています。



Economics of flying

飛行の経済学



More air traffic

航空交通量の増加



Electrification

電化



Cleaner skies

核心

A hi-rel optoelectronic part has been screened by a regiment of testing intended to ensure that devices will operate under abnormally severe levels of mechanical, environmental, and electrical stress.

高信頼性オプトエレクトロニクス部品は、デバイスが異常に過酷なレベルの機械的、環境的、電気的ストレス下でも動作することを保証することを目的とした、一連の試験によってスクリーニングされています。

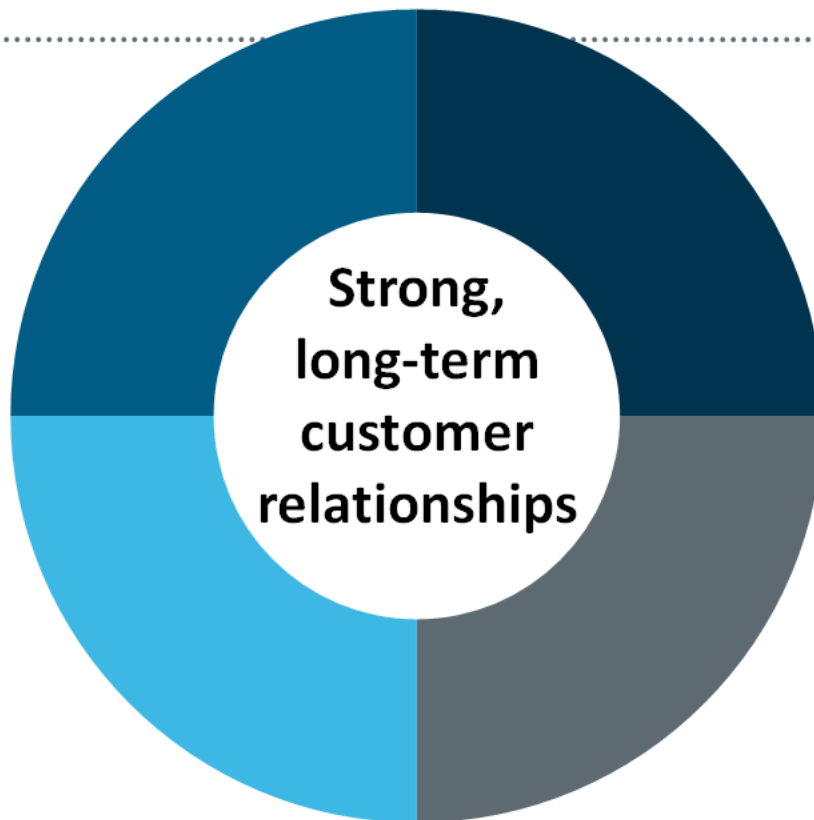
Why TT Electronics?

Long-term reliability
of every component
in tight-tolerance
applications

タイトトレランス(高精度)用途における
各コンポーネントの長期信頼性

Flexibility to
collaborate on the
development of a
wide mix of high
specification products

高仕様の多様な製品開発で
協働できる柔軟性



Long-standing
pedigree for over 40
years, financial
strength, and stability

40年以上にわたる長い実績、
財務的な強さと安定性

Appetite to take on
challenging projects,
even when required
in low volumes

少量案件であっても
難易度の高いプロジェクトに取り組
む姿勢

Customer Need for High Reliability Parts

- Collaborative approach to providing solutions
解決策を提供するための協働的なアプローチ
- Long term reliability
長期的な信頼性
- Quality and delivery
品質と納期
- Technical superiority
技術的優位性
- Screening procedures
スクリーニング手順
- Quality control
品質管理
- Well-established, not leading edge
定評があるが、最先端ではない



Our Hi-Rel Opto Parts

当社の高信頼性光学部品

Flexible.

Robust.

Customizable.

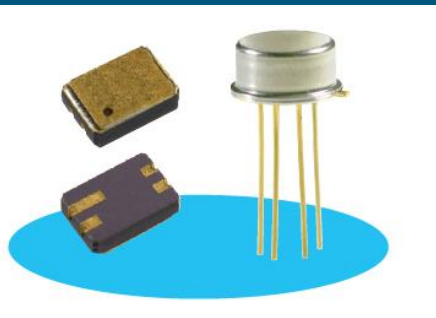
柔軟性がある。
堅牢。
カスタマイズ可能。

- Package style
パッケージスタイル
- Electrical parameters
電氣的パラメータ
- Radiation testing conditions
放射線試験条件
- Exposure requirements
被ばく要件
- DPA, RGA, 63/37 solder dip
DPA、RGA、63/37はんだディップ
- TID, Neutron & SEU testing
TID、NeutronおよびSEU試験
- Processing steps
処理手順
- Hermetic and plastic sealing for Hall Effects
ホール効果用の気密封止およびプラスチック封止
- Size and weight
サイズと重量
- Magnetic options for Hall Effects (unipolar, bipolar, ratiometric)
ホール効果用の磁気オプション(ユニポーラ、バイポーラ、レシオメトリック)
- Environmental lab and life testing
環境試験室および寿命試験

耐放射線オプトカップラ

Rad-Tolerant Optocouplers

*HCC1000, HCC1001,
HCC1002*



- Total Ionizing Dose(TID) Radiation Tolerant to 100Krad(Si)/cm² ELDRS(Enhanced low-dose radiation sensitivity)(0.1rad/S), extended to 300krad
総電離線量(TID) 100Krad(Si)/cm²までの耐放射線性 ELDRS(低線量率放射線感度の増加)(0.1rad/S)、300kradまで拡張
- Neutron Capable to 1E12 neutrons(14MeV), extended to 2E12(28MeV)
中性子 1E12 neutrons(14MeV)まで対応、2E12(28MeV)まで拡張
- TX and TXV processing available to MIL-PRF-19500
TXおよびTXV処理はMIL-PRF-19500に対応
- 1000V electrical Isolation 1000V電気絶縁
- Rise and Fall time: max. 20us 立上りおよび立下り時間: 最大20us

HCC1000	HCC1001	HCC1002
Base contact provided for conventional transistor biasing		No base contact provided
 Metal can package	 SMD 6-pin package	 SMD 4-pin package
The RAD tolerant optocoupler is ideal for a variety of space applications.		

高信頼性ホール効果センサー

Hi-Rel Hall Effect Sensors



OH3040S	HIGH RELIABILITY UNIPOLAR HALL SENSOR ASSEMBLY
OMH090S	Ceramic single pole Hall sensor
OMH3040S	Hermetic Hallogic Hall Effect - Latching
OMH3075S	Hermetic Hallogic Hall Effect - Latching
OMH3150S	Ceramic Linear ratiometric Hall Effect sensor

Hallogic® Sensors

OMH series (B, S versions)

- Designed for non-contact switching operations
非接触スイッチング動作用に設計
- Operates over broad range of supply voltages
広範囲の電源電圧で動作
- Excellent temperature stability in harsh environments
過酷な環境下でも優れた温度安定性
- Suitable for military and space applications
軍事および宇宙用途に適合
- Processing patterned after class B or S of MIL-STD-883
MIL-STD-883のクラスBまたはSに準拠した工程
- Through hole 0.40" lead length min.
スルーホール、リード長0.40"以上
- ESD rating of class 3B per MIL-STD-883G
MIL-STD-883Gに基づくESDクラス3B定格
- Tested to 350 Krad (Si) per MIL-STD-883
MIL-STD-883に基づき350 Krad (Si)まで試験済み

Ratiometric Linear Sensors

OMH3150 (B, S versions)

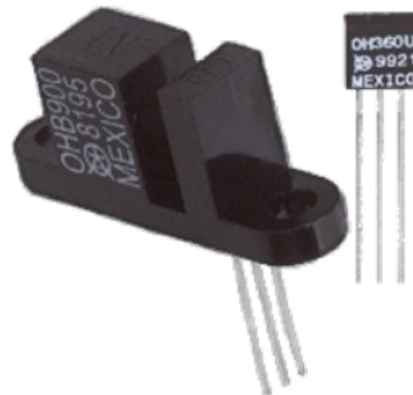
- Ratiometric linear output capable of sinking and sourcing current
電流のシンクおよびソースが可能なレシオメトリック・リニア出力
- Designed for non-contact switching operations
非接触スイッチング動作用に設計
- Operates over broad range of supply voltages
広範囲の電源電圧で動作
- Excellent temperature stability in harsh environments
過酷な環境下でも優れた温度安定性
- Suitable for military and space applications
軍事および宇宙用途に適合
- Processing patterned after class B or S of MIL-STD-883
MIL-STD-883のクラスBまたはSに準拠した処理

Switch options also available!

切り替えオプションもご利用いただけます！

WHY MAGNETIC SENSOR TECHNOLOGY?

- Magnetic sensors can be used at very high & low temperatures (150°C / -70°C) with short excursions to 180°C
磁気センサーは非常に高温・低温環境で使用可能 (150° C / -70° C、短時間なら180° Cまで)
- Magnetic sensors can be used in very dirty environments
非常に汚れた環境でも使用可能
- Radiation Capable to 345 KradS ELDRS (enhanced low-dose radiation sensitivity), SEE & Neutron
放射線耐性: 345 KradS ELDRS、SEE、ニュートロンに対応
- Hermetic & plastic versions
気密封止タイプ / プラスチックタイプの両方を提供
- Functional choices:
機能の選択肢:
 - Unipolar with Logic Outputs
ユニポーラ (ロジック出力)
 - Bipolar with Logic Output
バイポーラ (ロジック出力)
 - Linear Hall Effect (Ratiometric Linear Output)
リニアホール効果 (比率型リニア出力)



HIGH RELIABILITY HALLOGIC® HALL EFFECT SENSORS

高信頼性 Hallogic® ホール効果センサー

Unipolar Hall Effect Sensors ユニポーラ ホール効果センサー

- OMH090B, OMH090S, OMH3040, OMH3040B, OMH3040S

Bipolar Hall Effect Sensors バイポーラ ホール効果センサー

- OMH3075, OMH3075B, OMH3075S

Ratiometric Linear Hall Effect Sensors 比率型リニア ホール効果センサー

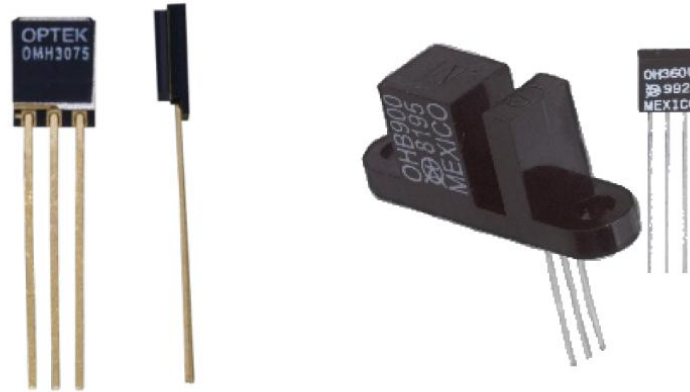
- OMH3150, OMH3150S
 - Designed for non-contact switching operations
非接触スイッチング用途向けに設計
 - Operates over a broad range of supply voltages
広い電源電圧範囲で動作
 - Excellent temperature stability in harsh environments
過酷環境でも優れた温度安定性
 - Suitable for military and space applications
軍事・宇宙用途に適合
 - Processing patterned after class B or S MIL-STD-883
MIL-STD-883 (Class B / S) に準拠したプロセス
 - Through Hole 0.40" [10.16 mm] lead length minimum
スルーホール実装: リード長 0.40インチ (10.16mm) 以上
 - ESD Rating of Class 3B per MIL-STD-883G, M3015.7, HB model
ESD耐性: Class 3B (MIL-STD-883G, M3015.7, HBモデル)
 - Tested to 350 Krad (si) per MIL-STD-883 method 1019.6 and up to 150 Krad (si) for ELDRS
放射線試験: 350 Krad (Si) / ELDRS 150 Krad (Si)



スクリーニングと検査

Screening and Testing

How do they work?
Where are they used?



Considerations

- Screened products in classification “TX,” “TXV,” “B,” “S,” and “ESA levels”
分類「TX」、「TXV」、「B」、「S」、および「ESALレベル」のスクリーニング済み製品
- ISO/TS 16949:2002 and BS EN ISO 9001:2000 certified
ISO/TS 16949:2002およびBS EN ISO 9001:2000認証取得
- Operates to MIL-PRF-19500, MIL-PRF-38535, MILSTD-750/833 performance requirements
MIL-PRF-19500、MIL-PRF-38535、MILSTD-750/833の性能要件に準拠
- ITAR registered
ITAR登録済み
- 100% test and inspection
100%試験および検査
- Custom devices for custom applications
カスタム用途向けカスタムデバイス
- Variety of packaging types available
各種パッケージタイプをご用意

SIMPLIFIED PRODUCT FLOWS

MIL-PRF-19500 / MIL-PRF-38535				ESA
TX	TXV	B	S	
Commercial Product	100%: Pre-cap visual	Commercial Product	Wafer lot acceptance 100%: Pre-cap visual	Wafer lot acceptance 100%: Pre-cap visual
High temperature storage	High temperature storage	High temperature storage	100%: Non-destruct bond pull	100%: Non-destruct bond pull
Temperature cycle	Temperature cycle	Temperature cycle	High temperature storage	High temperature storage
Constant acceleration	Constant acceleration	Constant acceleration	Temperature cycle	Temperature cycle
Hermetic seal test	Hermetic seal test	Hermetic seal test	Constant acceleration	Constant acceleration
Thermal impedance	Thermal impedance	Thermal impedance	PIND test	PIND test
HTRB	HTRB	HTRB	Hermetic seal test	Hermetic seal test
Power burn-in	Power burn-in	Power burn-in	Thermal impedance Serialize HTRB	Thermal impedance Serialize HTRB
QCI LAT A B C	QCI LAT A B C	QCI LAT* A B C D	PDA X-ray QCI LAT* A B D	PDA X-ray QCI LAT* LAT 3 LAT 2 LAT 1
Ship	Ship	Ship	Ship	Ship

SIMPLIFIED PRODUCT FLOWS DEFINITION

Group A	Consists of electrical tests and external visual done on a sample basis by Q.C.
Group B	Consists of tests conducted on a sample basis to verify production lot conformance to package integrity, environmental extremes, and long-term reliability; normally selected from the lots that are manufactured within a six-week time period, based on the date of final package sealing.
Group C	Further environmental testing, like Group B but sample testing is performed on a periodic basis (typically at 6 month intervals).
MIL-PRF-19500	Military document that establishes the general requirements for semiconductor devices for a particular series (e.g. 4N22A military series is spelled out in MIL-PRF-19500/486.) [optoelectronics]
MIL-PRF-38535	Military document that establishes the general requirements for integrated circuit (IC) semiconductor devices for a particular series [Hall Effects]
MIL-STD-750	Military specification that depicts electrical, mechanical, and environmental test procedures and methods for discrete semiconductors. [optoelectronics]
MIL-STD-883	Military specification that establishes uniform methods, controls and procedures for testing microelectronic devices. [Hall Effects]
Level TX	All TX units receive process conditions prior to quality conformance inspection.
Level TXV	All TXV units receive process conditioning prior to quality conformance inspection as well as 100% visual inspection.
Level B	All B units receive process conditioning prior to quality conformance inspection.
Level S	An ultra-high-reliability device with very strict quality assurance and manufacturing controls imposed. Level S devices are designed with space applications in mind with the highest product assurance reliability test.
Level ESA/ESCC/5000	European Space Agency specification that defines the general requirements for the qualification approval, procurement, including lot acceptance testing and delivery of discrete semiconductor components for space applications.
HTRB (High temp. reverse bias)	Devices are reverse biased in a non-conduction mode at high temperature for a period of time. This test is used primarily to screen out those devices with inferior semiconductor die characteristics, such as poor voltage breakdown or leakage current. Ambient temperature is usually specified somewhere between +100° to +175°C.
PIND (Particle impact noise detection)	Test according to method 2020.9 of MIL-STD-883 and method 2052.5 of MIL-STD-750 to detect loose particles inside an electronics device cavity.
RGA (Residual gas analysis)	Mass-spectrometric method for measuring moisture & other low-molecular-weight volatile compounds released from polymeric materials.
DPA (Destructive physical analysis)	Inspection program to prevent non-functional anomalous components from ever reaching the assembly phase of a program and to detect construction deviations which may developing to non-functional anomalous components later on in a product's lifetime.

SCREENING LEVELS

Process	TX	TXV	B	S	ESA
Ball bond	100%	100%	100%	100%	100%
Die/bond shear	Sample	Sample	Sample	Sample	Sample
Pre-cap visual @ 30X	Sample	100%	100%	100%	100%
Pre-cap visual @ 100X	N/A	N/A	N/A	100%	100%
Electrical test	100%	100%	100%	100%	100%
High temp. storage	Optional	Optional	Optional	Optional	100%
Temp. cycle	100%	100%	100%	100%	100%
Constant acceleration	100%	100%	100%	100%	100%
Visual inspect	N/A	100%	100%	100%	100%
PIND	N/A	N/A	N/A	100%	100%
Fine & gross leak	100%	100%	100%	100%	100%
Serialization	N/A	N/A	N/A	100%	100%
HTRB	100%	100%	100%	100%	100%
Burn-in & test	100%	100%	100%	100%	100%
X-Ray	N/A	N/A	N/A	100%	100%
External visual	100%	100%	100%	100%	100%
Lot acceptance	Yes	Yes	Yes	Yes	Yes
Group A/B/C/D	Required	Required	Required	Required	Required
Paperwork	Specified	Specified	Specified	Specified	Specified

LED / Sensor Pill Packages

LED／センサー ピルパッケージ

Pill Discretes and Assemblies

ピル型ディスクリート部品とアセンブリ





WHY PILLS?

- Small in size & only 30 mgs each 小型サイズ(1個あたり約30mg)
- Verified Hermetic to 5×10^{-10} atm-cc/sec 気密性検証済み: 5×10^{-10} atm-cc/sec
- Reflective or Transmissive Usage 反射型／透過型の両方で使用可能
- Space Capable 宇宙用途に対応
- Older than Dirt (> 40 years Production) 40年以上の長期生産実績
- Direct Mount into 0.062" PCB Hole 0.062インチのPCB穴へ直接実装可能



PILL DIMENSIONS ピル寸法

- LED & Sensor parts identical except for lens height:
- LED: 28 to 50 mils LED の高さ: 28~50 mil (ミル)
- Sensor: 22 to 34 mils センサーの高さ: 22~34 mil (ミル)
- LED has a narrower beam pattern than the sensor

LED の方がセンサーよりもビームパターンが狭い

Electrical Specifications

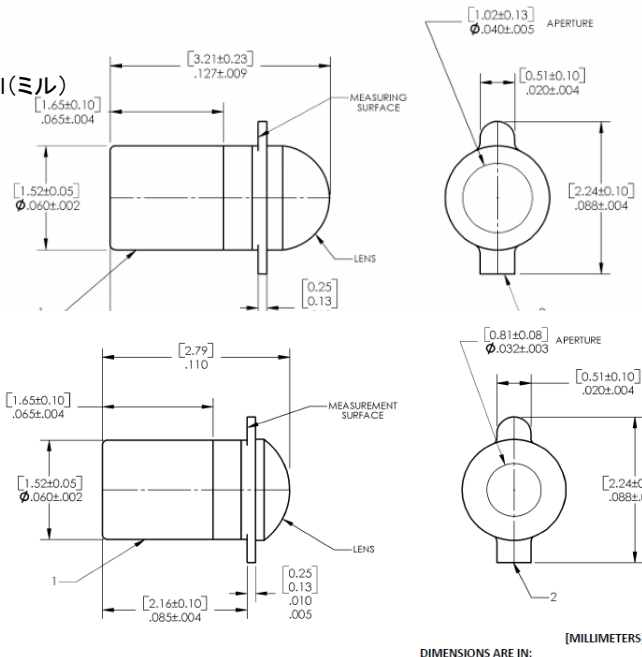
Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range	-65°C to +150°C
Operating Temperature Range	-55°C to +125°C
Collector-Emitter Voltage	50 V
Emitter-Collector Voltage	7.0 V
Soldering Temperature (5 seconds with soldering iron) ⁽¹⁾	260°C
Power Dissipation ⁽²⁾	50 mW

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Input Diode						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current OP604TXV, OP604S	7	-	-	mA	$V_{CE} = 5.0\text{ V}$, $E_E = 20\text{ mW/cm}^{2(3)(4)}$
$I_{C(EO)}$	Collector Dark Current	-	-	25	nA	$V_{CE} = 10.0\text{ V}$, $E_E = 0$
		-	-	100	μA	$V_{CE} = 30.0\text{ V}$, $E_E = 0$, $T_A = 100^\circ\text{C}$
$V_{BR(CEO)}$	Collector-Emitter Breakdown Voltage	50	-	-	V	$I_C = 100\text{ μA}$, $E_E = 0$
$V_{BR(ECO)}$	Emitter-Collector Breakdown Voltage	7	-	-	V	$I_C = 100\text{ μA}$, $E_E = 0$
V_{CESAT}	Collector-Emitter Saturation Voltage	-	-	0.4	V	$I_C = 0.4\text{ mA}$, $E_E = 20\text{ mW/cm}^{2(3)(4)}$
t_r	Rise Time	-	-	20	μs	$V_{CE} = 30\text{ V}$, $I_C = 1.00\text{ mA}$, $R_L = 100\text{ Ω}^{(2)(3)(4)}$
t_f	Fall Time	-	-	20		

LEDとセンサー部品は、レンズ高さ以外は同一仕様



Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range	-65°C to +150°C
Operating Temperature Range	-55°C to +125°C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron] ⁽¹⁾	260°C
Reverse Voltage	2.0 V
Continuous Forward Current	100 mA
Power Dissipation ⁽²⁾	100 mW

Notes:

- No clean or low solids. RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- Derate linearly 1.00 mW/°C above 25°C.

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
E_i [μW]	Radiant Power Output OP223	1.00	-	-	mW	$I_F = 50\text{ mA}$
	OP224 (S, TX, TXV)	1.50	-	-	mW	$I_F = 50\text{ mA}$
V_F	Forward Voltage	0.80	-	1.80	V	$I_F = 50\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2.0\text{ V}$
λ_p	Wavelength at Peak Emission	-	890	-	nm	$I_F = 50\text{ mA}$
θ	Spectral Bandwidth between Half Power Points	-	80	-	nm	$I_F = 50\text{ mA}$
$\Delta\lambda_p/\Delta T$	Spectral Shift with Temperature	-	0.18	-	nm/°C	$I_F = \text{Constant}$
θ_{HP}	Emission Angle at Half Power Points	-	24	-	Degree	$I_F = 50\text{ mA}$

CONFIGURATIONS 構成

- PCB Arrays multi channels TIR mode

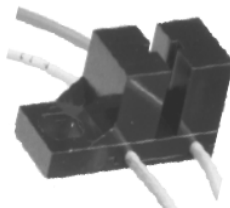
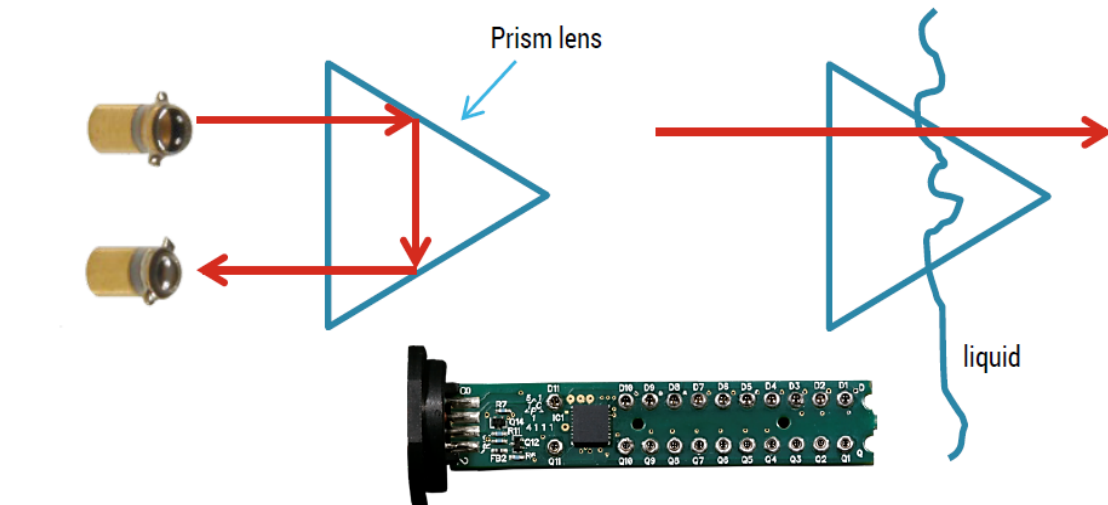
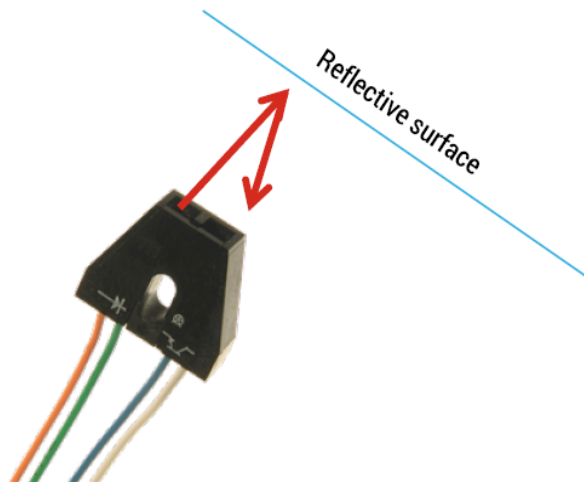
PCBアレイ(多チャンネル)／TIRモード

- OPB700TX, TXV reflective

OPB700TX, TXV(反射型)

- OPB821TX transmissive

OPB821TX(透過型)



SWITCH OPTIONS

Reflective Switches



Hermetically sealed components
TX, TXV, and S level devices processed to MIL-PRF-195000
Operating temperature range of -65°C to +125°C

Low profile to facilitate stacking 24" (457.2 mm)
minimum length lead wires to MIL-W-16878 standard

Slotted Switches



0.125" - 0.375" and greater slot width
Choice of aperture (0.050" or 0.010" width)
PCBoard mounting

High Reliability slotted and reflective switches offer superior reliability and hermetic components, surviving the harshest environmental, temperature, and mechanical stresses.

OPB700TX	Reflective object sensor
OPB700TXV	Reflective object sensor
OPB821TX	Slotted Optical Switch with wires
OPB847TX	Slotted Optical Switch
OPB870T51TX	Slotted Optical Switch

Hi-Rel Opto Applications

TT Electronics has nearly 50 years of experience and expertise in engineering and delivering electronics for applications in each of these markets.

TT Electronicsは、これらの各市場向けのアプリケーションにおける電子機器のエンジニアリングおよび提供において、約50年にわたる経験と専門知識を有しています。

Land 陸上

Calibration sensors for thermal weapons
熱兵器用キャリブレーションセンサー
Home/end-of-travel for military vehicles
軍用車両のホーム/エンド・オブ・トラベル
Military joy sticks; Door interlocks
軍用ジョイスティック; ドアインターロック
Brushless DC motors
ブラシレスDCモーター
Ignition timing on automotive engine
自動車エンジンの点火タイミング
Wheel speed on anti-lock brakes
アンチロックブレーキの車輪速度
RPM sensor on speedometer
スピードメーターのRPMセンサー

Sea 海洋

Throttle synchronization on marine engines
船舶用エンジンのスロットル同期
Brushless DC motor controls
ブラシレスDCモーター制御
Sensors for missile guidance and fin control
ミサイル誘導およびフィン制御用センサー
Door interlocks
ドアインターロック

Air

Critical position sensors for radar, missiles, cockpit controls
アンチロックブレーキの車輪速度
Sensors for missile guidance and fin control
アンチロックブレーキの車輪速度
Fin actuators
フィンアクチュエーター
Door interlocks
ドアインターロック
Brushless DC motor controls
ブラシレスDCモーター制御

Space 宇宙

Critical position sensors for all moving parts in satellites
衛星のすべての可動部向け重要位置センサー
Door and hatch, solar panel positioning, Antenna positioning, Camera, and position indication of robotic arms
ドアおよびハッチ、ソーラーパネルの位置決め、アンテナの位置決め、カメラ、およびロボットアームの位置表示
Solar panel actuators
ソーラーパネルアクチュエーター
Brushless DC motor controls
ブラシレスDCモーター制御
Power supplies (Opto-isolator)
電源 (フォトカブラ)
Launch controls for spacecraft
宇宙機の打ち上げ制御
In-orbit thruster
軌道上スラスター

SUCCESS STORY



Our customer required the IR emitter and Phototransistor with hermetically sealed package and survive capability in harsh environment

お客様は、気密封止パッケージのIRエミッターとフォトトランジスタ、および過酷な環境での耐久性を要求しました

We offered OP224S and OP604S in Hi-REL optical encoders - for Satellite applications

当社は、衛星用途向けのHi-REL光学エンコーダーとしてOP224SとOP604Sを提案しました - 衛星用途向け



Application -Optical Encoder

アプリケーション -光学式エンコーダ

Application Description

アプリケーションの説明

OP224S and OP604S are working as a position sensor to determine the position, including relative and absolute positions

OP224SおよびOP604Sは、相対位置および絶対位置を含む位置を特定するための位置センサーとして機能します。

Benefits

- Miniature Hermetically sealed package
小型気密封止パッケージ
- Provide the additional Space testing supporting
追加のSpaceテストのサポートを提供する
- Survive capability in Space environment
宇宙環境で生存する能力
- Strong technical supporting from BDE and factory
BDEと工場からの強力な技術サポート
- Processed to Optek's Military screening program, patterned after MIL-PRF-19500
MIL-PRF-19500に準拠したOptekの軍用スクリーニングプログラムで処理済み
- Operating temperature range :-55 to +125°C
動作温度範囲 :-55~+125°C

Commercial Satellite Robotic Arm

Summary

Challenge	Rugged space level Hall Effect for sensing position of “robotic” arms, doors & hatches, and solar panels on commercial satellites
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Products	OMH3040S
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End application	Robotic arms on commercial satellite.
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Solution / Outcome	Provided radiation hardened compliant product to meet space level performance
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We won the business due to our capability to perform MIL-PRF standard screening on our products.





AEROSPACE/DEFENSE SUCCESS STORY

航空宇宙／防衛分野の成功事例

Our customer required a robust Hall-Effect sensor for space applications – integrated in a brushless DC motor controller; hermetically sealed and group A, B, D screening required.

お客様は、宇宙用途向けに **堅牢なホール効果センサー** を必要としていました。このセンサーは **ブラシレスDCモーターコントローラ** に組み込まれ、**気密封止 (Hermetic)**、さらに **Group A・B・D のスクリーニング** が求められていました。

We offered our OMH3075B and OMH3075S (HED) which met all requirements of the customer.

当社は **OMH3075B** と **OMH3075S (HED)** を提案し、お客様の要求をすべて満たしました。

WHY WE WON 採用された理由

- We provided multiple hermetically sealed, space-level, Hall- Effect Device (HED) options for arduous environments
過酷環境向けの気密封止・宇宙レベルのHEDを複数提供できたため
- We were deemed as subject matter experts with HEDs
HED (Hall-Effect Device) の専門家として評価されたため
- Our heritage with Hi-Rel space products set us apart
高信頼性の宇宙製品で長い実績があったため

APPLICATION DESCRIPTION アプリケーション説明

- Brushless motor controller system that drives/communicates with a satellite camera

衛星カメラと通信しながら駆動するブラシレスモーターコントローラシステム



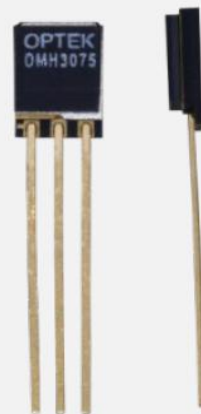
AIR SUCCESS STORY

Brushless DC Motor

Summary

Challenge	Rugged Hall Effect sensor for brushless DC motors intended for rugged avionics environment
Products	OMH3075B Hall Effect sensor
End Application	Brushless DC Stepper Motors
Solution / Outcome	Provided standard “B” version product to meet customer’s sensing needs

Our high reliability portfolio included a standard product offering that fit the customer’s need without any need for customization.



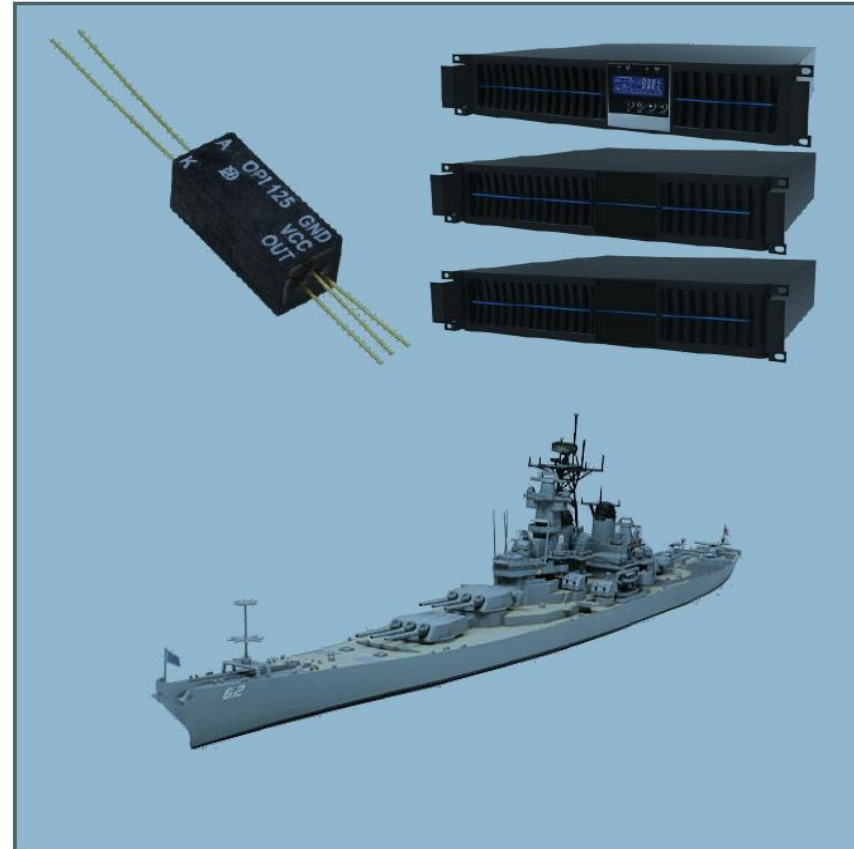
SEA SUCCESS STORY

Power Supply

Summary

Challenge	Ruggedized isolator, capable withstanding isolation voltages up to 15k Volts
Products	OPI125TXV optoisolator
End Application	Circuit surge protection for an Uninterruptible Power Supply (UPS) for Northrop Grumman / NAVSEA
Solution / Outcome	Provided an optically coupled isolator with hermetically sealed components with an operating range from -55C to +125C

We offered the customer package options as well as analog and digital output options with voltage capability of up to 50k.



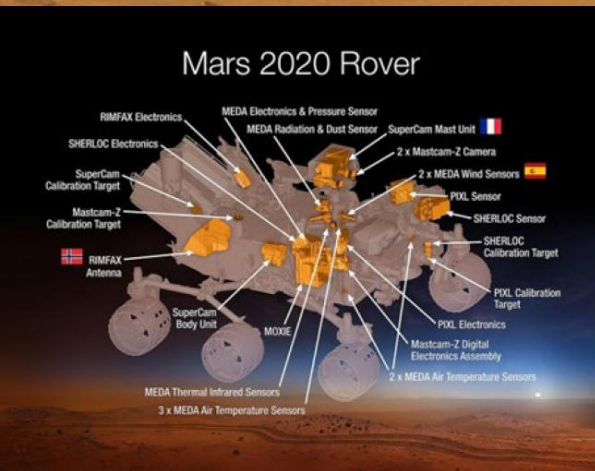
SPACE SUCCESS STORY 宇宙分野の成功事例

MARS 2020

Hall Effect (OMH3075S +DPA) – wants
RAD capability

Hall Effect – OMH3075B for
Super Cam

- **Mars 2020** is a Mars rover mission by NASA's Mars Exploration Program which launched in July of 2020. The Mars rover has been investigating an astrobiologically relevant ancient environment on Mars, investigating its surface geological processes and history, including the assessment of its past habitability, the possibility of extant life on Mars, and potential for preservation of biosignatures within accessible geological materials.
- **Mars 2020** was announced by NASA on 4 December 2012 at the fall meeting of the American Geophysical Union in San Francisco. The rover's design is derived from the Curiosity rover, and carries a different scientific payload. Nearly 60 proposals for rover instrumentation were evaluated and, on 31 July 2014, NASA announced the payload for the rover.



SPACE SUCCESS

RAD Capable Optically Coupled Isolator for Electrical Isolation Between Circuits

回路間の電氣的絶縁用RAD対応光結合アイソレータ



SMD 6-pin package

Application Description

The HCC1001 Optically Coupled Isolator is utilized to supply close-loop feedback signals by feeding analog information from the output to the input control circuit in a space-level Un-interruptible Power Supply(UPS)



アプリケーション概要

HCC1001光結合アイソレータは、宇宙用レベルの無停電電源装置(UPS)において、出力から入力制御回路へアナログ情報をフィードバックすることで、クローズドループのフィードバック信号を供給するために使用されます。



AEROSPACE/DEFENSE SUCCESS STORY

航空宇宙／防衛分野の成功事例

Our customer was in need of a robust optoisolator for power management in precision weapons and guidance systems for the US Army and Marine Corps.

お客様は、米陸軍および海兵隊向けの精密兵器・誘導システムの電力管理に使用する、堅牢なオプトアイソレーター（光絶縁素子）を必要としていました。

We offered a custom solution, the 4N49UTX, surface-mount, optically coupled isolator. We customised the tape-reel packaging and additional Q-clauses, which the customer required.

当社は 4N49UTX（表面実装型・光結合アイソレーター）をカスタム仕様で提供し、テープ＆リール包装や追加の Q 条項（品質要求）にも対応しました。

WHY WE WON 採用された理由

- Collaborated with distribution partner 販売代理店との協働体制
- Weekly engineering/operations team meetings and order status エンジニアリング／オペレーションチームによる毎週のミーティングと注文状況管理

APPLICATION DESCRIPTION アプリケーション説明

- The GPS guidance system reduces the ballistic dispersion of conventional 155mm artillery projectiles – transforming them into near-precision weapons

PS誘導システムにより、従来の155mm砲弾の弾道散布を大幅に低減し、ほぼ精密兵器へと変換する技術



Hall Effect Sensor Success Story in Rockets

ロケットにおけるホール効果センサー成功事例



AEROSPACE/DEFENSE SUCCESS STORY

航空宇宙／防衛分野の成功事例

Our space customer required a MIL-STD-883 screened sensor to meet the strict requirements of their rockets.

宇宙関連の顧客は、ロケット用途の厳しい要求を満たすため、MIL-STD-883スクリーニング済みのホール効果センサーを必要としていました。

Our Business Development Engineer worked closely with the customer's engineering team to find the perfect high-reliability opto solution to meet their needs. Our OMH3075B is used to detect position and speed of a motor supplying fuel to the rockets.

エンジニアリングチームは OMH3075B を提案し、ロケットへ燃料を供給するモーターの 位置と速度の検出 に使用されました。

WHY WE WON 採用された理由

- Strong relationship with customer
顧客との強固な関係性
- Engineering excellence
エンジニアリングの専門性と技術力

APPLICATION DESCRIPTION アプリケーション説明 FUTURE OPPORTUNITIES 将来の機会

- Motor supplying fuel to rockets

ロケットへ燃料を供給するモーター
の位置・速度検出

- There are 3 components per unit, and due to the critical nature of the applications, there is a back-up unit. 6 components used in total assembly.

1ユニットあたり3つのコンポーネント
を使用重要用途のため バックアップユ
ニット も搭載合計 6つのコンポーネント
がアセンブリに使用される