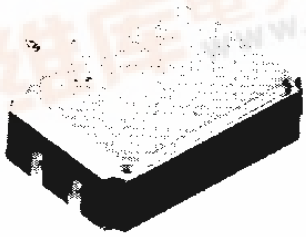
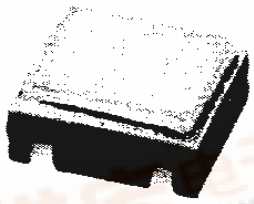
OPTEK

Product Bulletin HCR4148
September 1996

Surface Mount Switching Diode
Types HCR4148D, HCR4148M, TX, TXV



HCR4148D
Dual Isolated Switching Diode



HCR4148M
Single Switching Diode

Features

- Constructed from ceramic, metal, and glass for rugged environments
- Eutectic mounted silicon die.
- TX and TXV processing available

Description

The HCR4148 series are hermetically sealed, ceramic surface mount switching diodes designed for the High Reliability user. Specifications are similar to those of the 1N4148-1 as defined by MIL-PRF-19500/116. The miniature three and four pin packages are ideal where PC board space and device weight are important design considerations.

High reliability processing per MIL-PRF-19500 TX or TXV equivalent levels are available on request. Typical screening and lot acceptance testing is provided on page 13-4. MIL-PRF-19500/116 may be used as a guide for more detail. TX and TXV devices are 100% thermal response tested. To order add "TX" or "TXV" suffix to part number (i.e. HCR4148MTX).

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Operating Junction Temperature	-65° C to +200° C
Storage Temperature	-65° C to +200° C
Reverse Breakdown Voltage (BV_R)	100 V
Continuous Forward Current (I_O)	200 mA
Surge Current (I_{FSM}, tp = 1/120 sec.)	2 A

Part Number	$R_{\theta JC}$	Power Dissipation(1)	Burn-in Current(2)
HCR4148M	175° C/W	300 mW	100 mA
HCR4148D	100° C/W(3)	200 mW/diode	80 mA/diode

Notes:
(1) This rating is given as an aid to designers and applies to a device that is soldered to a substrate (i.e. PC board) that is held at 25°C.
(2) This value is the maximum D.C. current that can be conducted while the device is operating in a burn-in test socket where convection cooling is limited. (Applies to TX and TXV processing only).
(3) This rating given for the dual diode device applies when both devices are being driven equally.

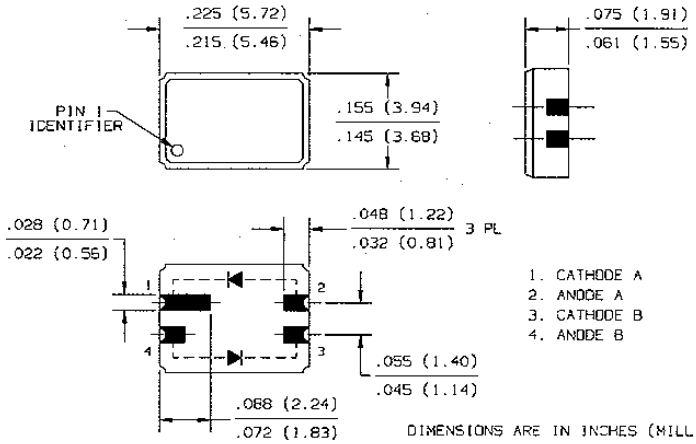
Types HCR4148D, HCR4148M, TX, TXV

Electrical Characteristics (T_A = 25°C unless otherwise noted)

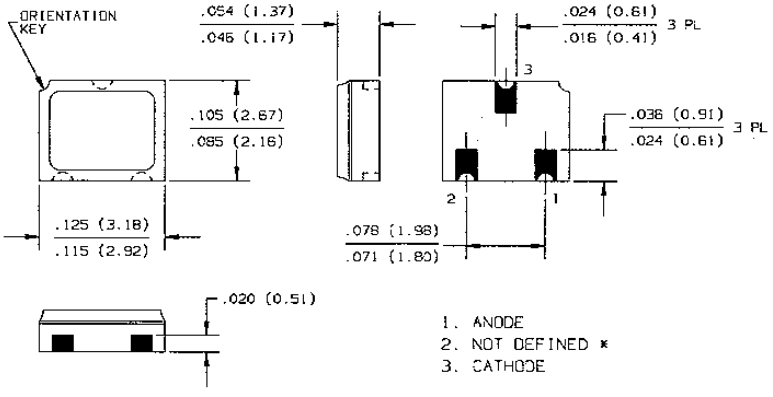
Symbol	Parameter	Min	Max	Units	Test Conditions
V_{F1}	Forward Voltage		1.0	V	I_F = 10 mA
V_{F2}	Forward Voltage		1.2	V	I_F = 100 mA
$V_{(BR)}$	Breakdown Voltage	100		V	I_R = 100 µA
I_{R1}	Reverse Leakage Current		25	nA	V_R = 20 V
I_{R2}	Reverse Leakage Current		500	nA	V_R = 75 V
I_{R3}	Reverse Leakage Current		50	µA	V_R = 20 V, T_A = 150°C
I_{R4}	Reverse Leakage Current		100	µA	V_R = 75 V, T_A = 150°C
V_{F3}	Forward Voltage		0.80	V	I_F = 10 mA, T_A = 150°C
V_{F4}	Forward Voltage		1.2	V	I_F = 100 mA, T_A = -55°C
I_{FSM}	Surge Current	1		A	t = 8.3 ms
$V_{(fr)}$	Forward Recovery Voltage		5.0	V	I_F = 50 mA, Recover to 110% of V_F at I_F = 50 mA
*$t_{(fr)}$	Forward Recovery Time		20	ns	I_F = 50 mA, Recover to 110% of V_F at I_F = 50 mA
*C_1	Junction Capacitance		4.0	pF	V_R = 0 V, f = 1MHz, Vsig = 50 mV, p-p max
*C_2	Junction Capacitance		2.8	pF	V_R = 1.5 V, f = 1MHz, Vsig = 50 mV, p-p max
*t_r	Reverse Recovery Time		5.0	ns	I_F = I_r = 10 mA, I_{rr} = 1.0 mA, R_L = 100 Ω, C = 3 pF

*These tests are guaranteed by die design and are not performed on assembled devices.

HCR4148D
Dual Isolated Switching Diode



HCR4148M
Single Switching Diode



Optek Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (214)323-2200 Fax (214)323-2396