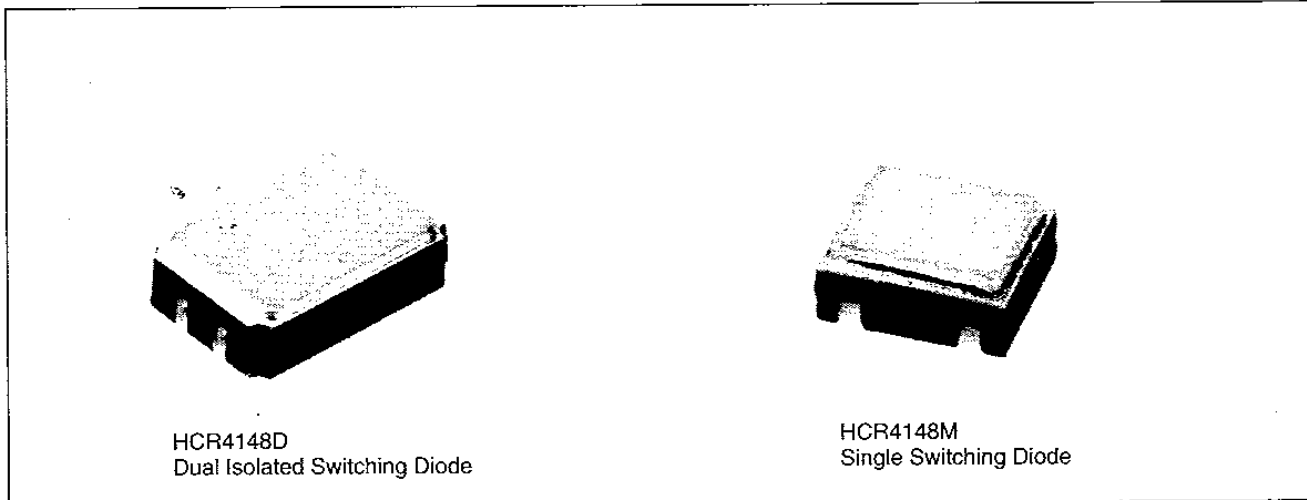


# Surface Mount Switching Diode

## Types HCR4148D, HCR4148M, TX, TXV



### 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 ( $T_A = 25^\circ\text{C}$ 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 ( $I_{FSM}$ , $t_p = 1/120$ sec.) .....	2 A

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

### Notes:

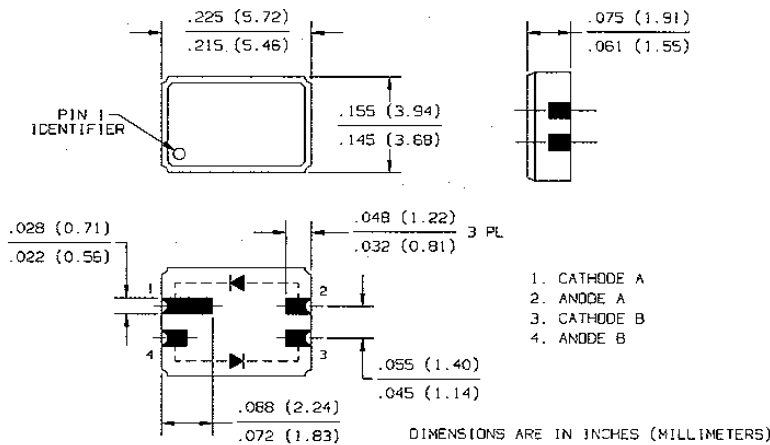
- (1) This rating is given as an aid to designers and applies to a device that is soldered to a substrate (i.e. PC board) that is held at 25° C.
- (2) This value is the maximum D.C. current that can be conducted while the device is operating in a burn-in test socket where convection cooling is limited.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

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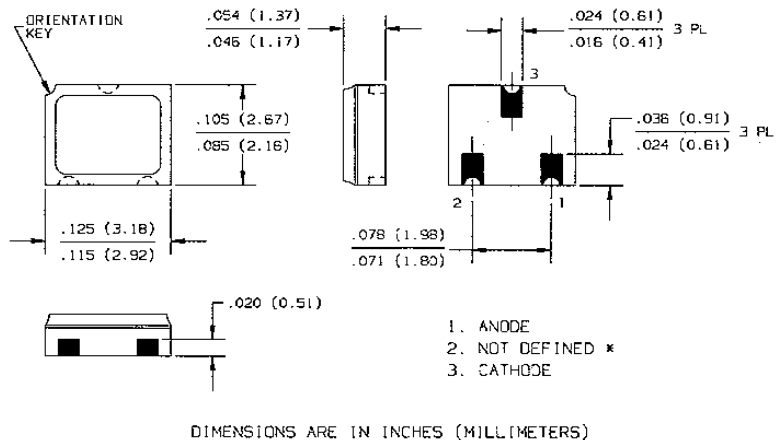
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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

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



## HCR4148D Dual Isolated Switching Diode



## HCR4148M Single Switching Diode

Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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