



ESD Protection Diode – TPD5030

Rev 1.0

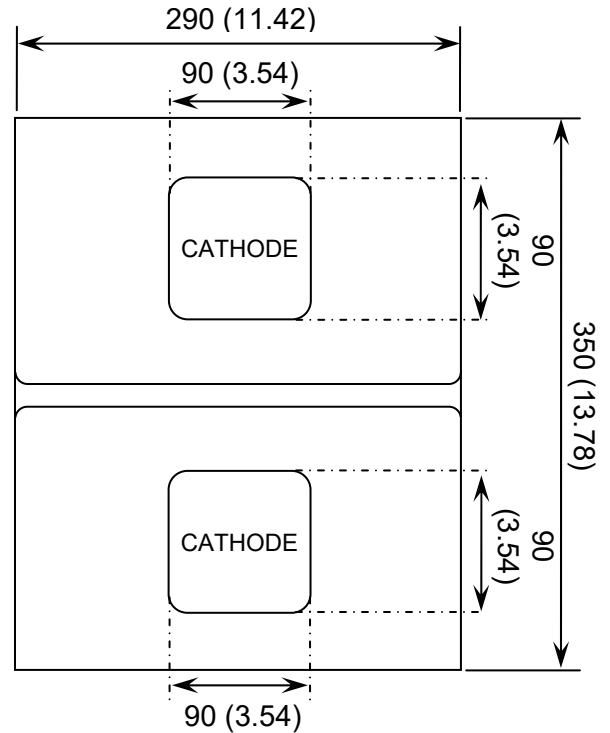
29/11/20

Monolithic dual diode transient voltage suppressor in bare die form

Features:

- Configures as x2 unidirectional or x1 bidirectional (x2 wire)
- Very low leakage
- Low capacitance
- 5V stand-off voltage
- High reliability tested grades.

Die Dimensions in μm (mils)



CHIP BACK MUST BE CONNECTED TO ANODE

NOTE:

THIS MONOLITHIC CHIP COMPRISES X2 UNIDIRECTIONAL TVS DIODES WITH COMMON ANODE CONNECTION.

Ordering Information

The following part suffixes apply:

- No suffix - MIL-STD-750 /2073 Visual Inspection
- "H" - MIL-STD-750 /2073 Visual Inspection + MIL-PRF-38534 Class H LAT
- "K" - MIL-STD-750 /2073 Visual Inspection + MIL-PRF-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

www.siliconsupplies.com/quality/bare-die-lot-qualification

Supply Formats:

- Default – Die in Waffle Pack (400 per tray capacity)
- Sawn Wafer on Tape – By specific request
- Unsawn Wafer – By specific request
- Die Thickness <> 230 μm (9 Mils) – On request
- With additional electrical selection – On request

Mechanical Specification

Die Size (Unsawn)	290 x 350 11.42 x 13.78	μm mils
Cathode Pad Size	90 x 90 3.54 x 3.54	μm mils
Die Thickness	230 (± 15) 9.05 (± 0.59)	μm mils
Top Metal Composition	Al	
Back Metal Composition	Si	





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Absolute Maximum Ratings¹ $T_J = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Peak Pulse Power ($t_p = 8/20 \mu\text{s}$)	P_{PK}	140	W
Peak Pulse Current ($t_p = 8/20 \mu\text{s}$)	I_{PP}	11	A
Peak Pulse Current ($t_p = 5/50 \text{ ns}$)		40	
Operating Junction temperature	T_J	-55 to 175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65 to 200	$^\circ\text{C}$

1. Operation above the absolute maximum rating may cause device failure. Operation at the absolute maximum ratings, for extended periods, may reduce device reliability.

ESD Rating Compliant to IEC 61000-4-2

PARAMETER	SYMBOL	VALUE	UNIT
Air	V_{ESD}	± 30	kV
Contact		± 30	kV

Electrical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Reverse Stand-Off Voltage	V_{RWM}		-	-	5	V
Reverse Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	6.5	-	8.5	V
Reverse Leakage	I_R	$V_{RWM} = 5\text{V}$	-	2	150	nA
Clamping Voltage	V_C	$I_{PP} = 5\text{A}, t_p = 8/20 \mu\text{s}$	-	-	9.7	V
		$I_{PP} = 11\text{A}, t_p = 8/20 \mu\text{s}$	-	-	13.6	
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$	-	25	40	pF
		$V_R = 2.5\text{V}, f = 1\text{MHz}$	-	20	30	
Reverse Dynamic Resistance	$R_{DYN, REV}$	$I_{PP} > 2\text{A}$	-	0.55	-	Ω
Forward Dynamic Resistance	$R_{DYN, FWD}$		-	0.35	-	

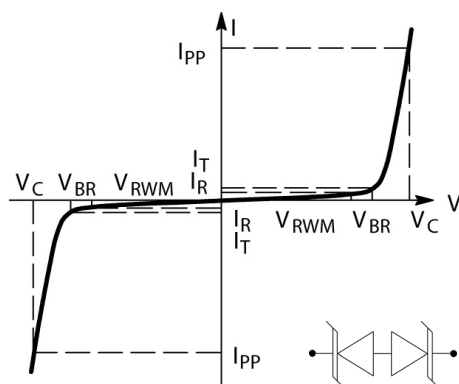


FIGURE 1. Bidirectional Configuration

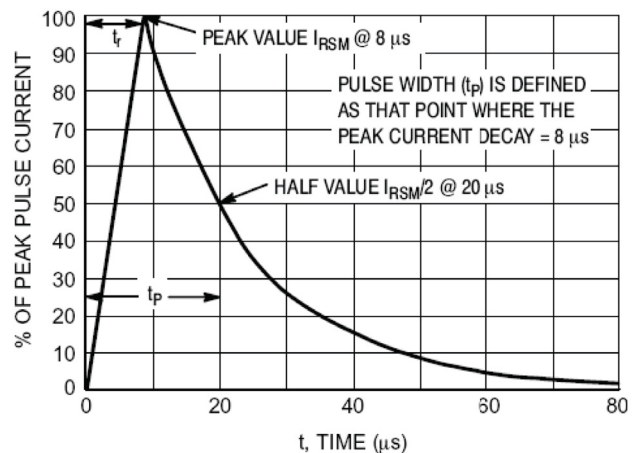


FIGURE 2. Peak Pulse Current Versus Time





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Typical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise stated

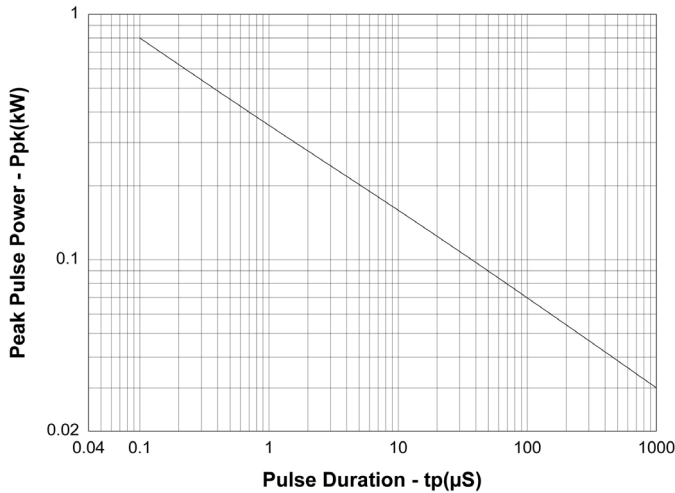


FIGURE 3. Peak Pulse Power Versus Pulse Duration

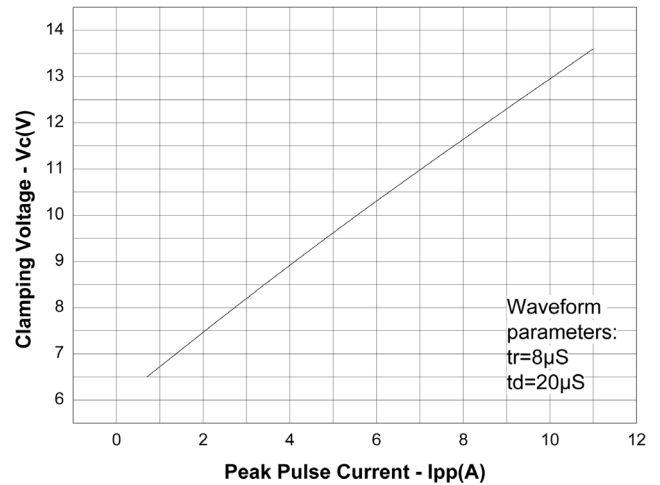


FIGURE 4. Clamp Voltage Versus Peak Pulse Current

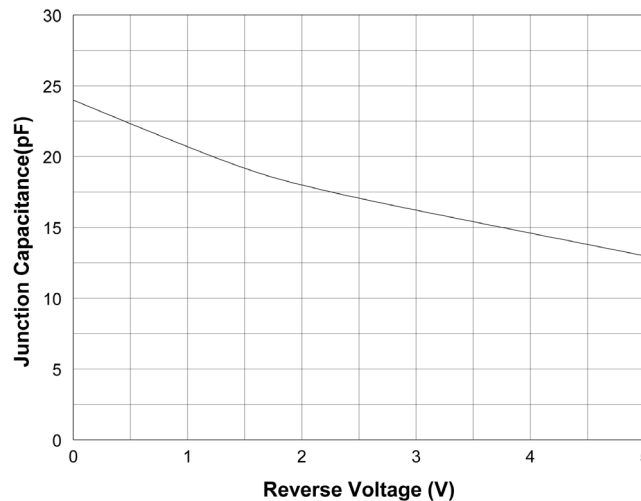


FIGURE 5. Junction Capacitance Versus Reverse Voltage

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