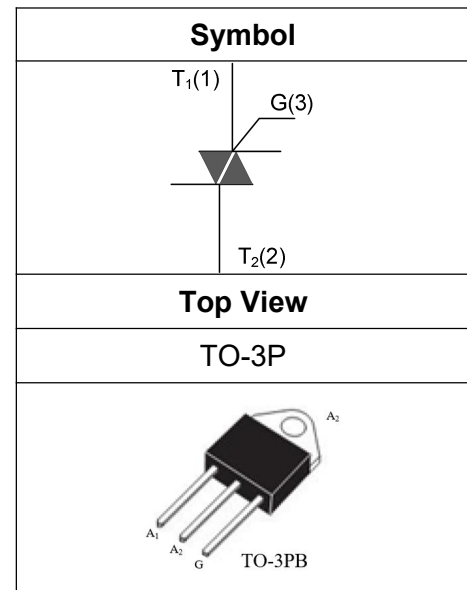


Features

- ◆ Five-layer NPNPN-Structured Silicon Bidirectional Device
- ◆ Single-Side Trenching Technology and Mesa Glass Passivation Process
- ◆ Backside Multilayer Metallized Electrode
- ◆ High Blocking Voltage and Superior Temperature Stability

Application

- ◆ Solid State Relay
- ◆ Heating Controller (Temperature Adjustment)
- ◆ Motor Speed Controllers for Vacuum Cleaners, Power Tools, and Similar Applications



Product Summary:

Symbol	Value	Unit
$I_{T(RMS)}$	41	A
V_{DRM}	800	V
V_{RRM}	800	

■ Absolute Maximum Ratings

Symbol	Parameter	Test Condition	Value	Unit
$I_{T(RMS)}$	RMS On-State Current	$T_C = 90^{\circ}\text{C}$	41	A
I_{TSM}	Non-Repetitive Surge Peak On-State Current	$F = 50\text{Hz}, t = 20\text{ms}$	410	
I^2t	I^2t Value for Fusing	$t_p = 10\text{ms}$	880	A^2s
d_i/d_t	Critical Rate of Rise of On-State Current	$T_J = 125^{\circ}\text{C}$	50	$\text{A}/\mu\text{s}$
V_{DRM}	Repetitive Peak Off-State Voltage	$T_J = 25^{\circ}\text{C}$	800	V
V_{RRM}	Repetitive Peak Reverse Voltage	$T_J = 25^{\circ}\text{C}$	800	
I_{GM}	Peak Gate Current	$t_p = 20\mu\text{s}, T_J = 125^{\circ}\text{C}$	8.0	A
$P_{G(AV)}$	Average Gate Power Dissipation	$T_J = 125^{\circ}\text{C}$	1.0	W
T_{stg}	Storage Junction Temperature Range	-	-40 to 150	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-	-40 to 125	



BT41W80X(W)

41A Bidirectional Thyristor

Thermal Characteristics

Symbol	Parameter	Test Condition	Value(Max)	Unit
$R_{th(j-c)}$	Junction to Case (AC)	Insulated	0.9	$^{\circ}\text{C/W}$
		Non-Insulated	0.6	

Electrical Characteristics (3 Quadrants)

Symbol	Parameter	Test Condition	Quadrant	Value		Unit
I _{GT}	Gate Trigger Current	V _D = 12V, R _L = 100Ω	I-II-III	Max	50	mA
V _{GT}	Gate Trigger Voltage				1.5	
V _{GD}	Gate Non-Trigger Voltage	T _J = 125°C		Min	0.2	V
I _H	Holding Current	I _T = 0.5A		Max	60	mA
I _L	Latching Current	I _G = 1.2I _{GT}	I-III		70	
			II		160	
d _V /d _t	Critical Rate-of-Rise of Off-Stage Voltage	V _D = 2/3V _{DRM} , T _J = 125°C		Min	500	V/μs
(d _V /d _t) _c	Critical Rate-of-Rise of Commutation Voltage	T _J = 125°C			10	

Electrical Characteristics (4 Quadrants)

Symbol	Parameter	Test Condition	Quadrant	Value		Unit
I _{GT}	Gate Trigger Current	V _D = 12V, R _L = 100Ω	I-II-III	Max	50	mA
			IV		120	
V _{GT}	Gate Trigger Voltage		T _J = 125°C		I-II-III-IV	Min
V _{GD}	Gate Non-Trigger Voltage	0.2				
I _H	Holding Current	I _T = 0.5A		Max	80	mA
I _L	Latching Current	I _G = 1.2I _{GT}	I-III-IV		70	
			II		160	
d _V /d _t	Critical Rate-of-Rise of Off-Stage Voltage	V _D = 2/3V _{DRM} , T _J = 125°C		Min	500	V/μs
(d _V /d _t) _c	Critical Rate-of-Rise of Commutation Voltage	T _J = 125°C			10	

Static Characteristics

Symbol	Parameter	Test Condition	Value(Max)	Unit
V_{TM}	Peak ON-State Voltage	$I_{TM} = 82\text{A}, T_J = 25^{\circ}\text{C}$	1.5	V
V_{TO}	Threshold Voltage	$T_J = 125^{\circ}\text{C}$	0.86	
R_D	Dynamic Resistance	$T_J = 125^{\circ}\text{C}$	6.4	$\text{m}\Omega$
I_{DRM}	Repetitive Peak Off-State Current	$V_D = V_{DRM}, V_R = V_{RRM}, T_J = 25^{\circ}\text{C}$	10	μA
I_{RRM}	Repetitive Peak Reverse Current	$V_D = V_{DRM}, V_R = V_{RRM}, T_J = 125^{\circ}\text{C}$	2.0	mA

■ Characteristic Curve

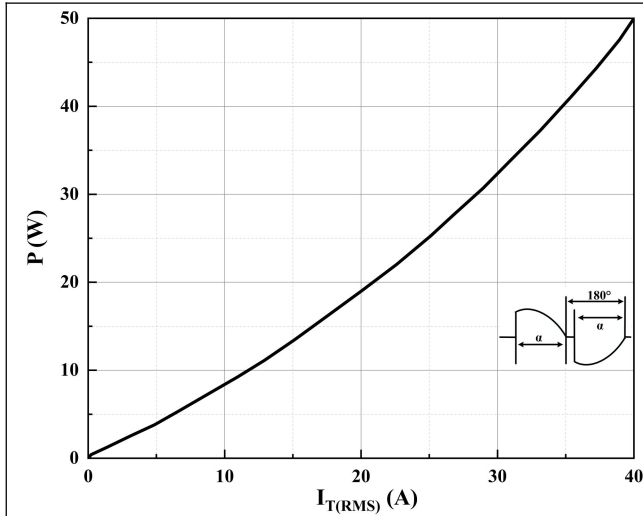


Figure 1. Power Dissipation vs. RMS On-State Current

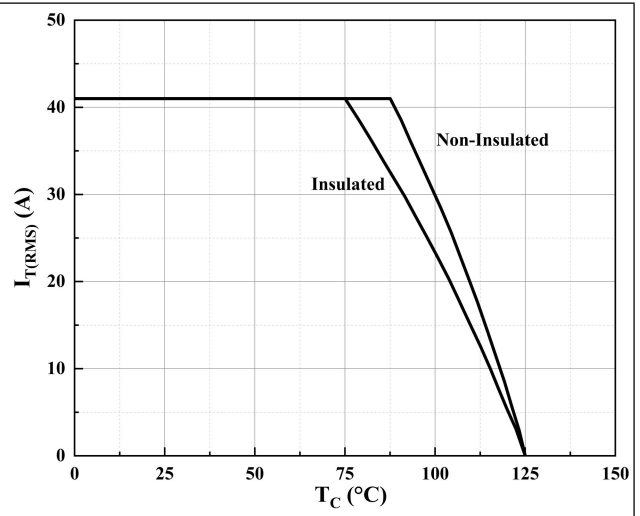


Figure 2. RMS On-State Current vs. Case Temperature

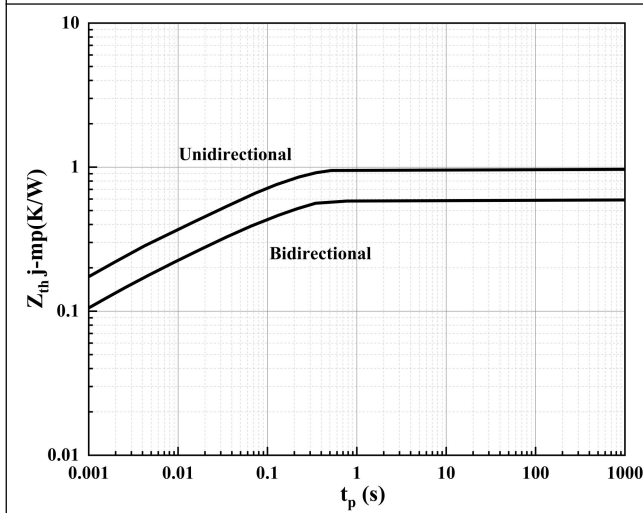


Figure 3. Relative Variation of Thermal Impedance Junction to Case vs. Pulse Duration

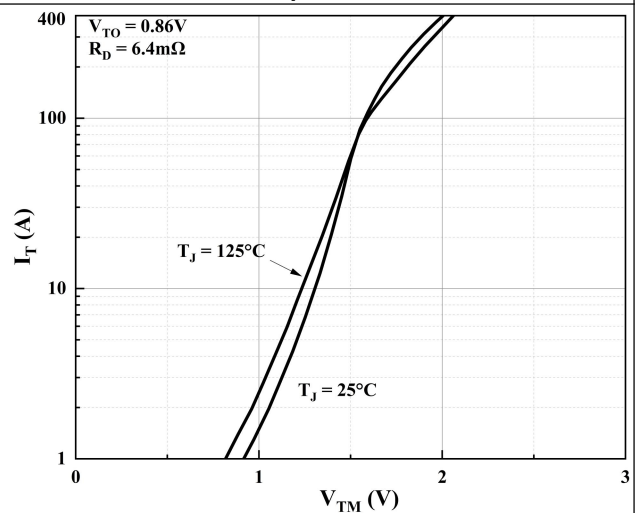


Figure 4. On-State Current vs. Peak ON-State Voltage

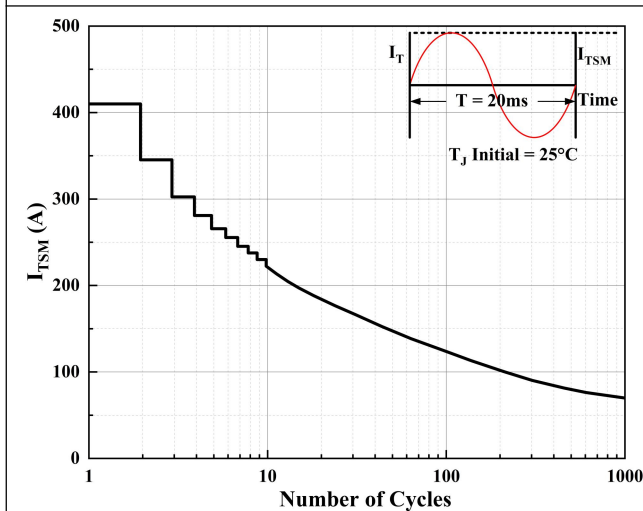


Figure 5. Surge Peak On-State Current vs. Number of Cycles

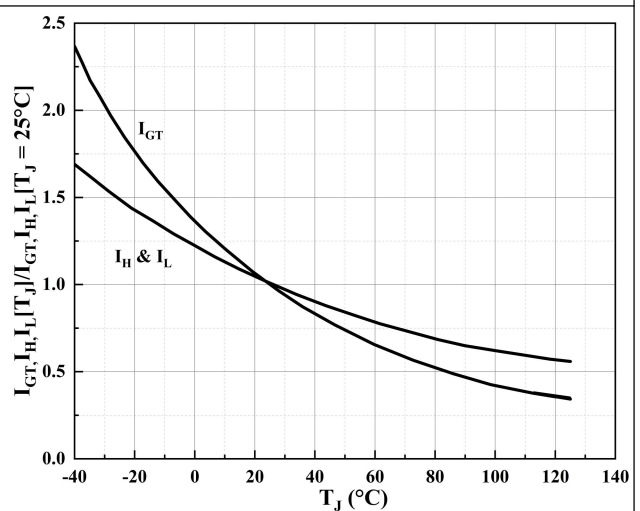


Figure 6. Gate Trigger Current, Holding Current and Latching Current vs. Junction Temperature

■ Characteristic Curve

