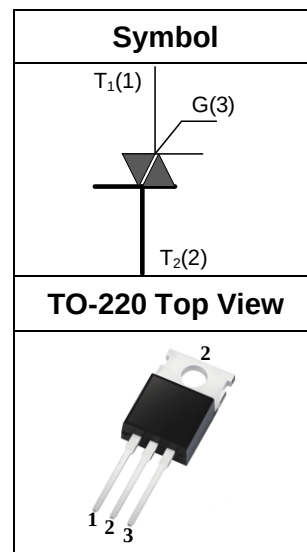


Features

- ◆ 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)}	24	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°C	24	A
I _{TSM}	Non-Repetitive Surge Peak On-State Current	F = 50Hz, t = 20ms	240	
I ² t	I ² t Value for Fusing	t _p = 10ms	288	A ² s
di/dt	Critical Rate of Rise of On-State Current	T _J = 125°C	50	A/μs
V _{DRM}	Repetitive Peak Off-State Voltage	T _J = 25°C	800	V
V _{RRM}	Repetitive Peak Reverse Voltage	T _J = 25°C	800	
I _{GM}	Peak Gate Current	t _p = 20μs, T _J = 125°C	4.0	A
P _{G(AV)}	Average Gate Power Dissipation	T _J = 125°C	1.0	W
T _{stg}	Storage Junction Temperature Range	-	-40 to 150	°C
T _J	Operating Junction Temperature Range	-	-40 to 125	



BT24C80X(W)

24A Bidirectional Thyristor

■ Thermal Characteristics

Symbol	Parameter	Test Condition	Value(Max)	Unit
R _{th(j-c)}	Junction to Case (AC)	Insulated	2.05	°C/W
		Non-Insulated	1.25	

■ 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	
I _H	Holding Current	I _T = 0.5A		Max	80	mA
I _L	Latching Current	I _G = 1.2I _{GT}	I-III		80	
			II		100	
dv/dt	Critical Rate-of-Rise of Off-Stage Voltage	V _D = 2/3V _{DRM} , T _J = 125°C			Min	
(dv/dt) _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		80	
			II		100	
dV/dt	Critical Rate-of-Rise of Off-Stage Voltage	V _D = 2/3V _{DRM} , T _J = 125°C		Min	500	V/μs
(dV/dt) _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} = 40A, T _J = 25°C	1.5	V
V _{TO}	Threshold Voltage	T _J = 125°C	0.87	
R _D	Dynamic Resistance	T _J = 125°C	14.6	mΩ
I _{DRM}	Repetitive Peak Off-State Current	V _D = V _{DRM} , V _R = V _{RRM} , T _J = 25°C	5.0	μA
I _{RRM}	Repetitive Peak Reverse Current	V _D = V _{DRM} , V _R = V _{RRM} , T _J = 125°C	1.0	mA

■ Characteristic Curve

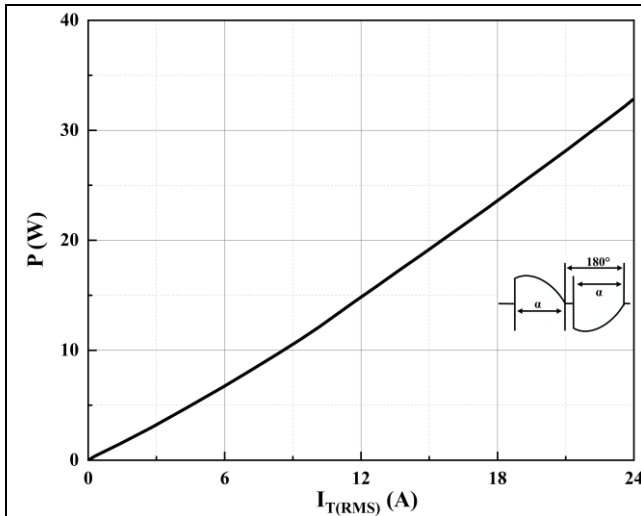


Figure 1. Power Dissipation vs. RMS On-State Current

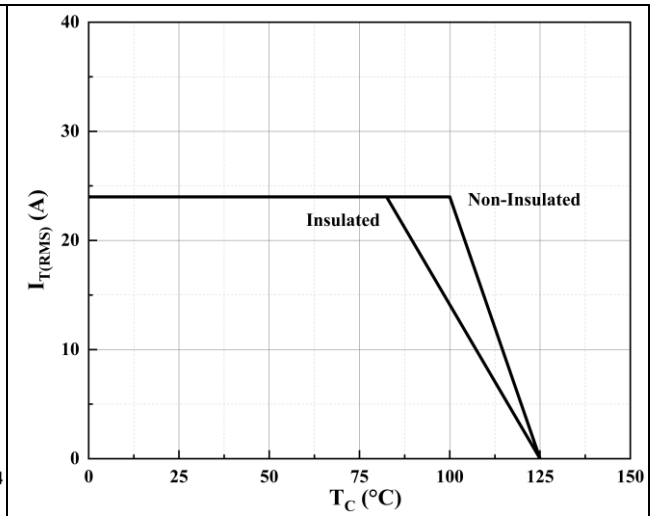


Figure 2. RMS On-State Current vs. Case Temperature

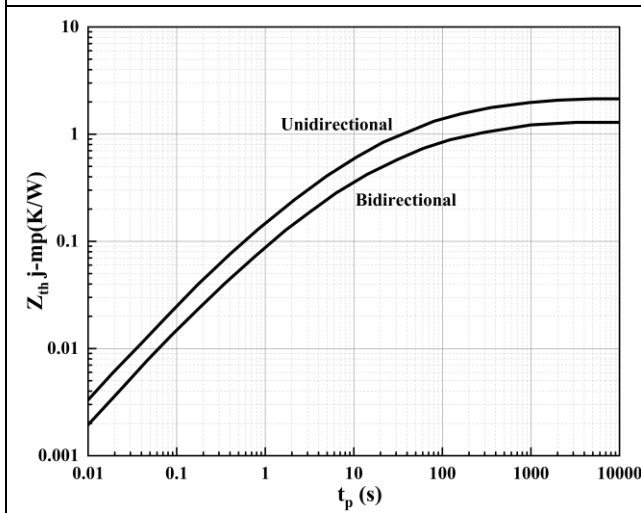


Figure 3. Relative Variation of Thermal Impedance Junction to Case vs. Pulse Duration

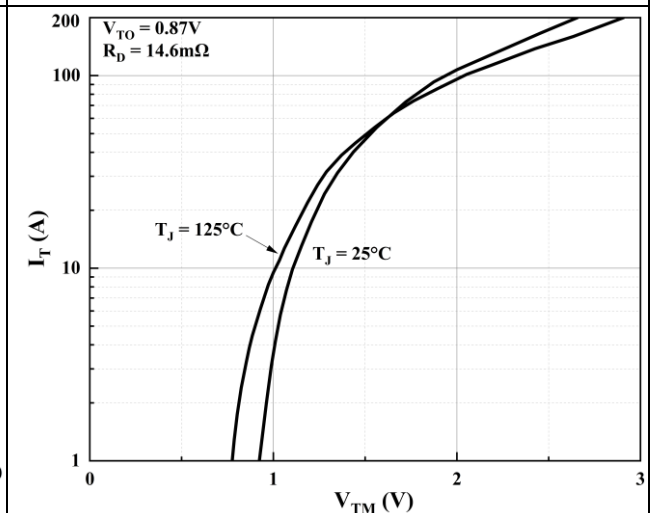


Figure 4. On-State Current vs. Peak ON-State Voltage

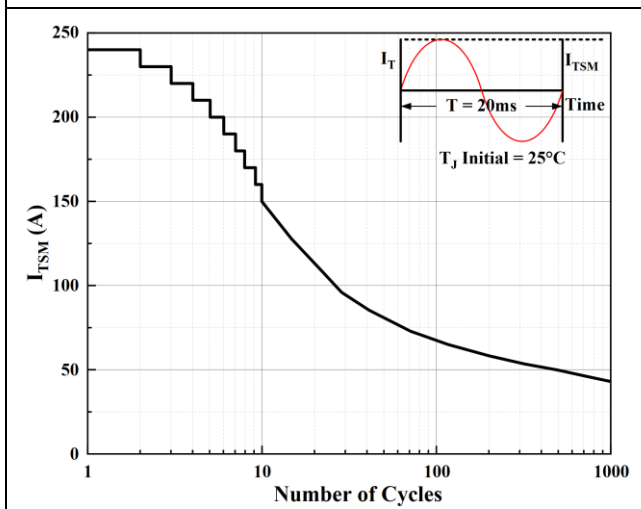


Figure 5. Surge Peak On-State Current vs. Number of Cycles

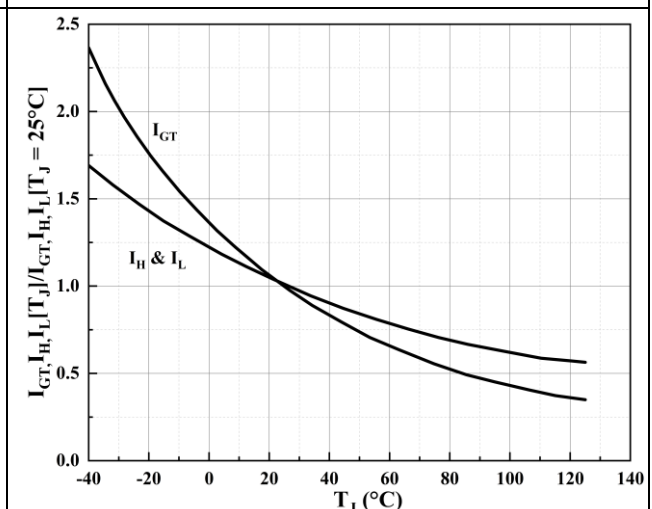
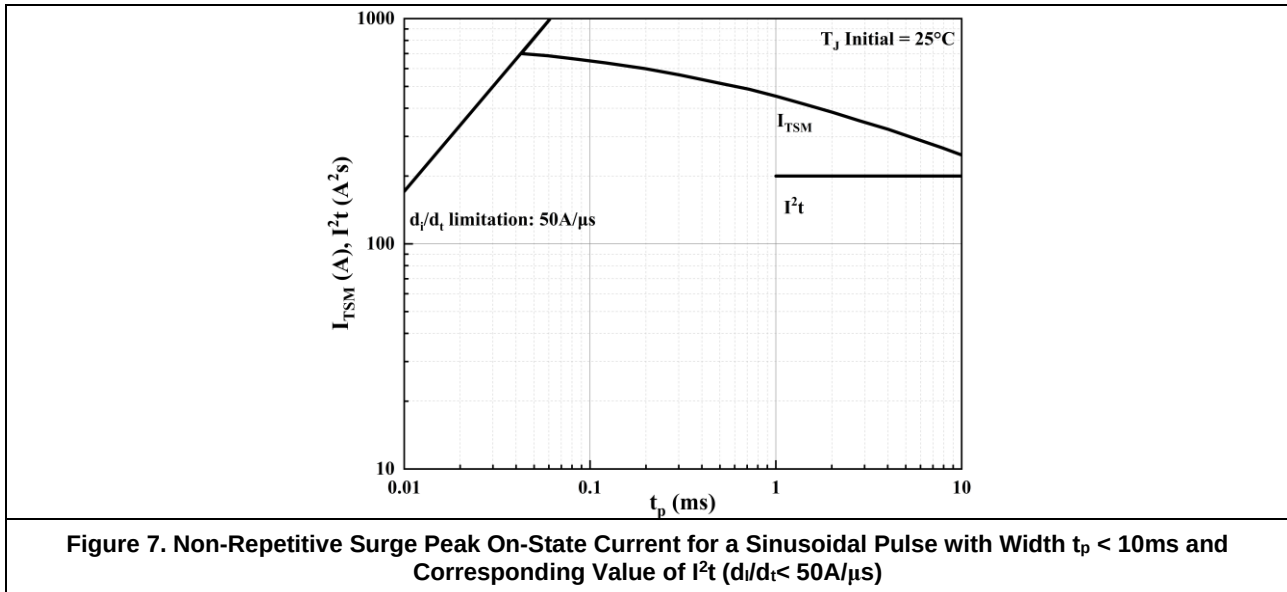


Figure 6. Gate Trigger Current, Holding Current and Latching Current vs. Junction Temperature

■ Characteristic Curve



■ Package Information

TO-220

Unit: mm

