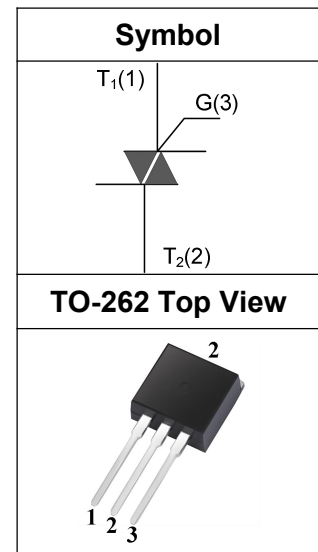


Features

- ◆ 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
d _i /d _t	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	

■ Thermal Characteristics

Symbol	Parameter	Test Condition	Value(Max)	Unit
$R_{th(j-c)}$	Junction to Case (AC)	-	1.25	°C/W

■ 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
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	
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	1.5	V
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	
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	$I_{TM} = 40A, T_J = 25^\circ C$	1.5	V
V_{TO}	Threshold Voltage	$T_J = 125^\circ C$	0.87	
R_D	Dynamic Resistance	$T_J = 125^\circ C$	14.6	m Ω
I_{DRM}	Repetitive Peak Off-State Current	$V_D = V_{DRM}, V_R = V_{RRM}, T_J = 25^\circ C$	5.0	μA
I_{RRM}	Repetitive Peak Reverse Current	$V_D = V_{DRM}, V_R = V_{RRM}, T_J = 125^\circ C$	1.0	mA

■ Characteristic Curve

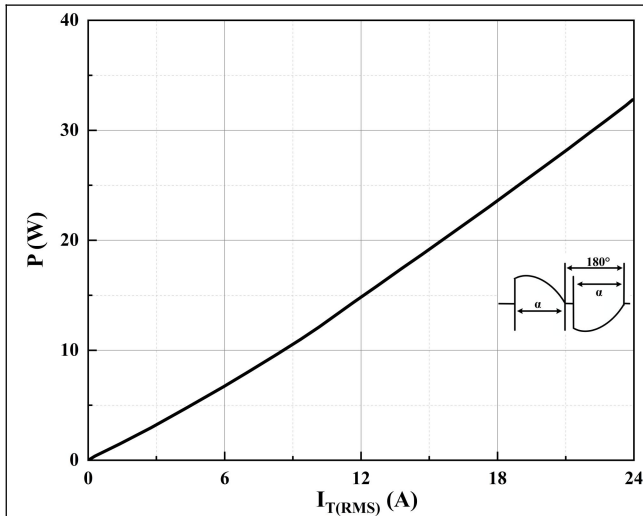


Figure 1. Power Dissipation vs. RMS On-State Current

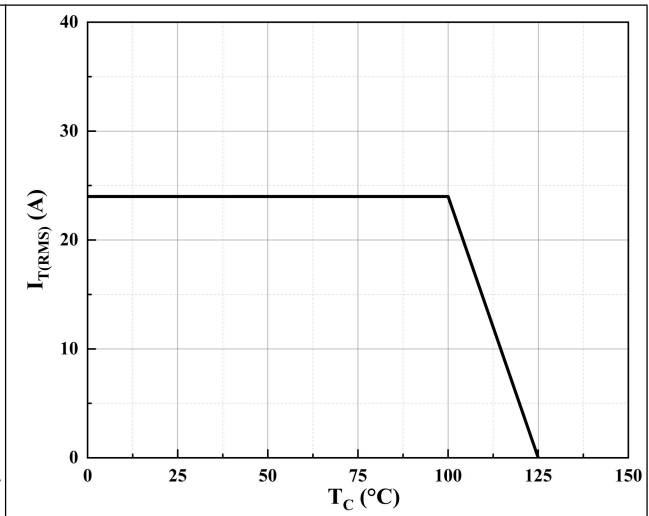


Figure 2. RMS On-State Current vs. Case Temperature

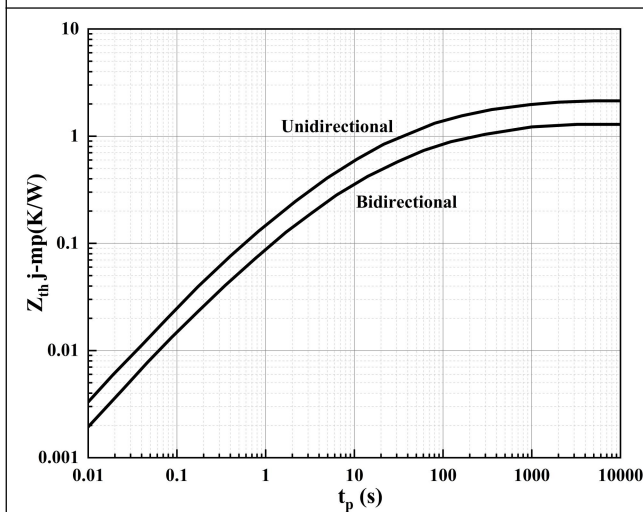


Figure 3. Relative Variation of Thermal Impedance Junction to Case vs. Pulse Duration

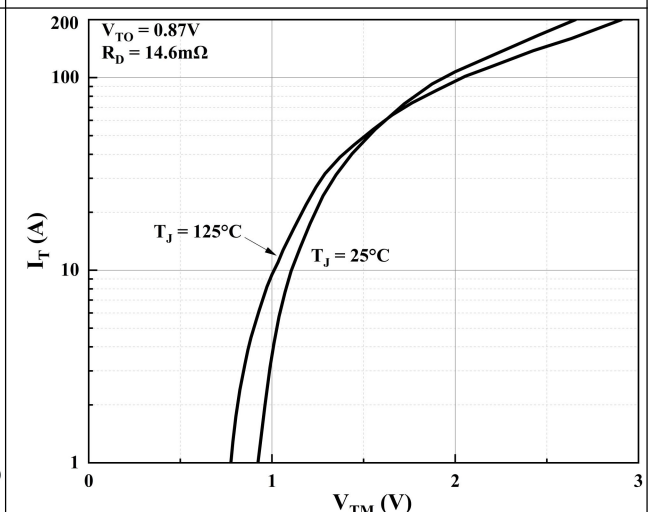


Figure 4. On-State Current vs. Peak ON-State Voltage

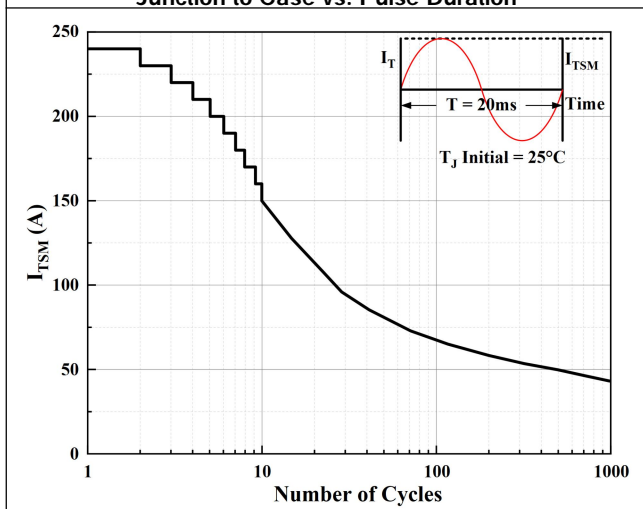


Figure 5. Surge Peak On-State Current vs. Number of Cycles

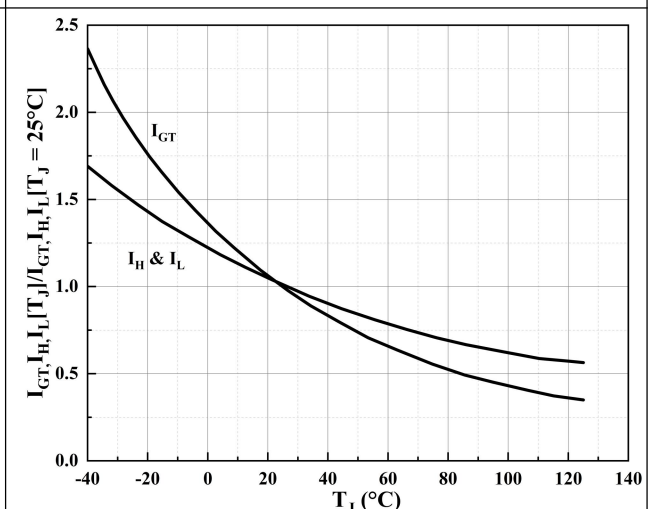


Figure 6. Gate Trigger Current, Holding Current and Latching Current vs. Junction Temperature

■ Characteristic Curve

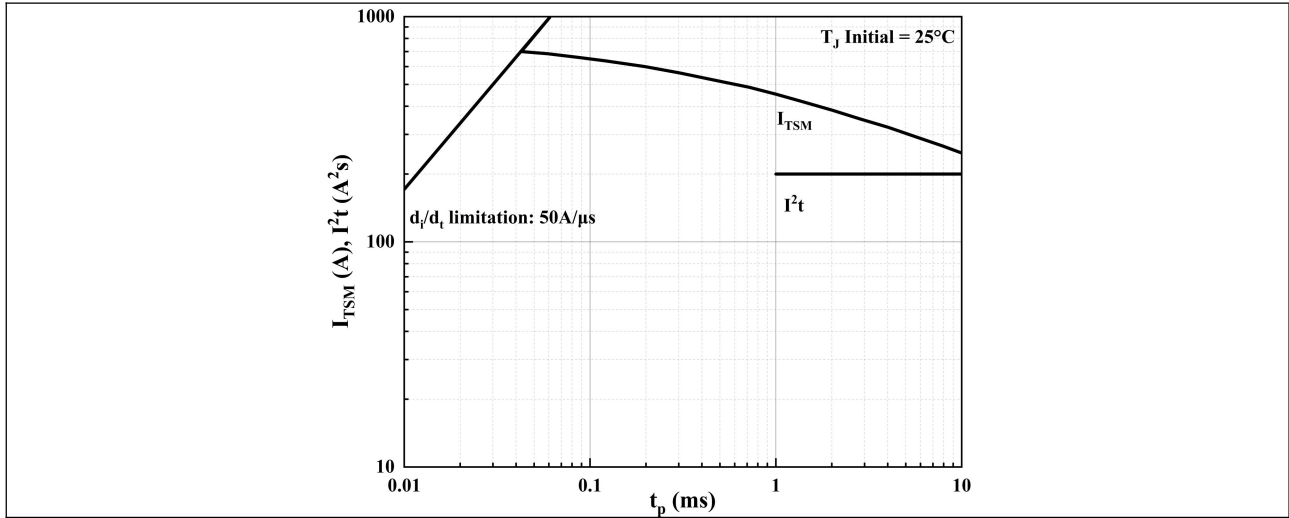


Figure 7. Non-Repetitive Surge Peak On-State Current for a Sinusoidal Pulse with Width $t_p < 10$ ms and Corresponding Value of I^2t ($d_i/d_t < 50$ A/μs)

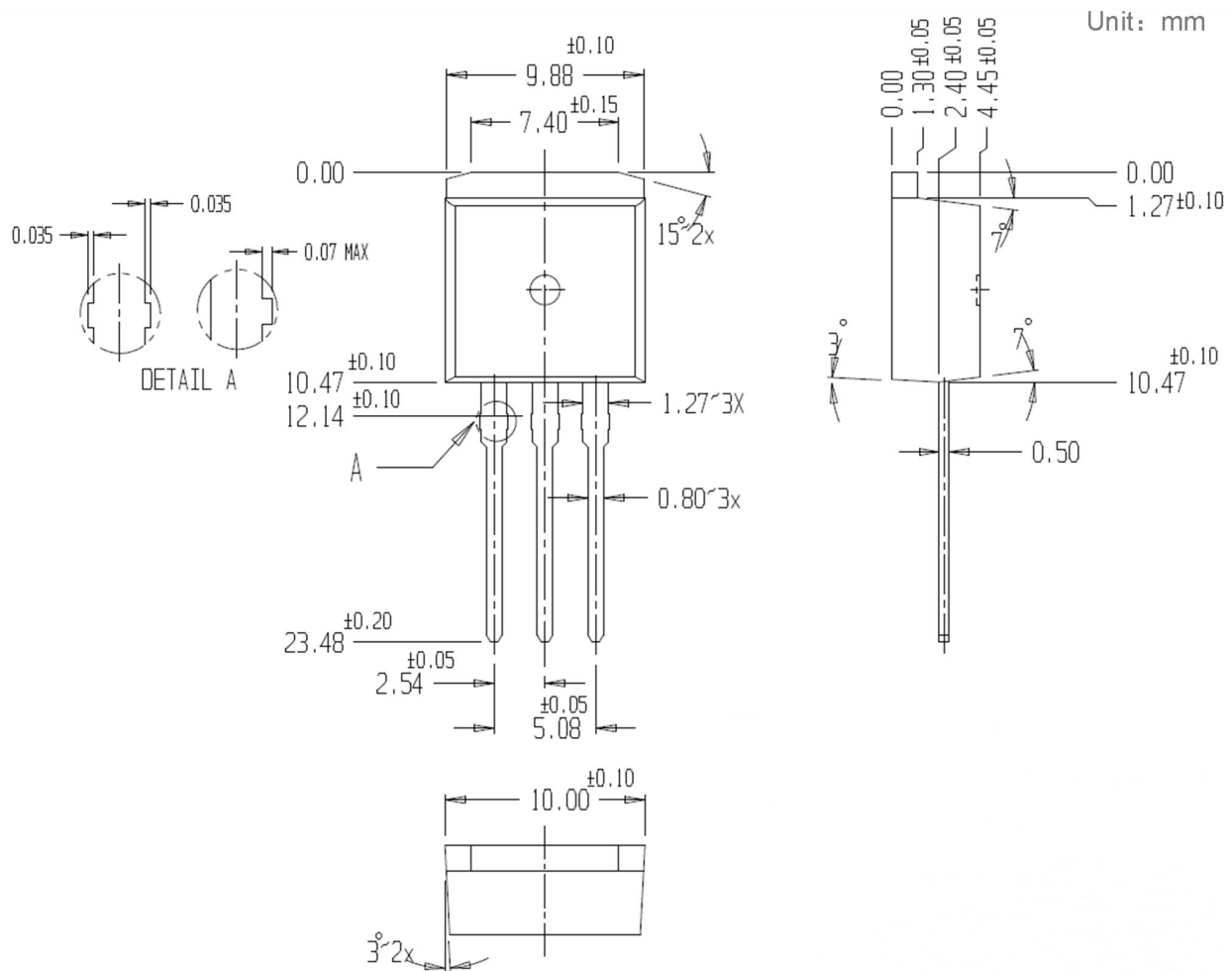
■ Ordering Information

BT	(A)	24	K	80	X	(W)	(H)
Triacs	A: Insulated None: Non-insulated	$I_{T(RMS)}: 24$ A	TO-262	$V_{DRM} \geq 800$ V $V_{RRM} \geq 800$ V		C: $I_{GT1-3} \leq 35$ mA B: $I_{GT1-3} \leq 50$ mA C: $I_{GT1-3} \leq 35$ mA, $I_{GT4} \leq 50$ mA B: $I_{GT1-3} \leq 50$ mA, $I_{GT4} \leq 120$ mA	None: $T_j = 125^\circ\text{C}$ H: $T_j = 150^\circ\text{C}$
						W: 3 Quadrants None: 4 Quadrants	

BT24K80X(W)
24A Bidirectional Thyristor

■ Package Information

TO-262



■ Revision History

Version	Date	Subjects (major changes since last revision)
1.0	2025-05-08	Datasheet Complete
1.1	2026-09-16	Add Ordering Information