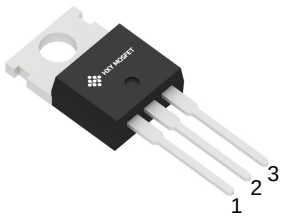
BT139B

Silicon Controlled Rectifier

Descriptions

Triac in a TO-220 Plastic Package.



TO-220

PIN1：Main Terminal 1
PIN 2：Main Terminal 2
PIN 3：Gate

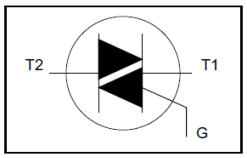
Features

Glass passivated,sensitive gate triacs in a plastic envelope，where high sensitivity is required in all four quadrants.

Applications

Use in general purpose bidirectional switching and phase control applications.

Equivalent Circuit



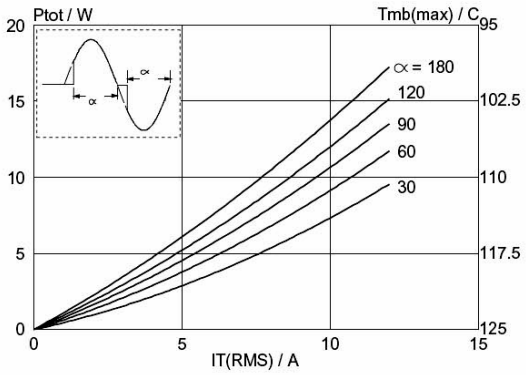
Absolute Maximum Ratings(Ta=25℃)

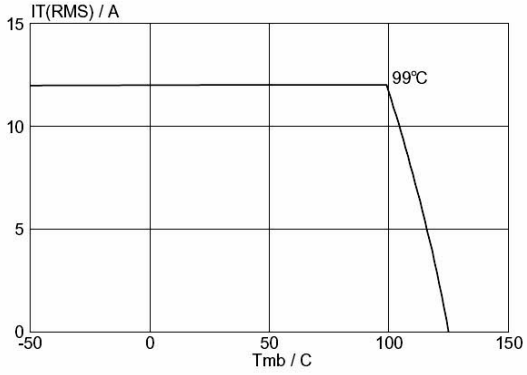
Parameter		Symbol	Rating		Unit
			600E	800E	
Repetitive peak off-state voltages		V_{DRM}（T_j=25℃）	600	800	V
RMS on-state current		$I_{T(RMS)}$	12		A
Non-repetitive peak on-state current		$I_{TSM(t=20ms)}$	95		A
Non-repetitive peak on-state current		$I_{TSM(t=16.7ms)}$	105		A
I^2_t for fusing		$I^2t_{(t=10ms)}$	45		A^2S
Repetitive rate of rise of on-state current after triggering	I_{TM}=12A I_G=0.2A dI_G/dt=0.2A/μs	T2+G+	50		A/μS
		T2+G-	50		A/μS
		T2-G-	50		A/μS
		T2-G+	10		A/μS
Peak gate current		I_{GM}	2.0		A
Peak gate voltages		V_{GM}	5.0		V
Peak gate power		P_{GM}	5.0		W
Average gate power (Over any 20 ms period)		$P_{G(AV)}$	0.5		W
Junction Temperature		T_j	125		℃
Storage Temperature Range		T_{stg}	-40～150		℃
Thermal resistance junction to ambient		$R_{th(j-a)}$	60		K/W
Thermal resistance junction to mounting base		$R_{th(j-b)}$	1.5		K/W

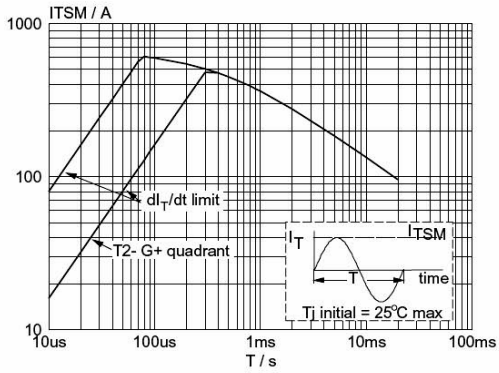
Electrical Characteristics(Ta=25℃)

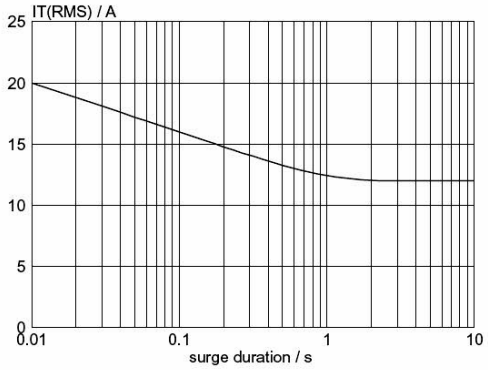
Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Gate trigger current	I_{GT}	V_D=12V I_T=0.1A	T2+G+		2.5	10	mA
			T2+G-		4	10	
			T2-G-		5	10	
			T2-G+		11	25	
Latching current	I_L	V_D=12V I_G=0.1A	T2+G+			30	mA
			T2+G-			40	
			T2-G-			30	
			T2-G+			40	
Holding current	I_H	V_D=12V I_G=0.1A				30	mA
On-state voltage	V_T	I_T=15A			1.4	1.65	V
Gate trigger voltage	V_{GT}	V_D=12V I_T=0.1A			0.7	1.5	V
		V_D=400V I_T=0.1A, T_j=125℃		0.25	0.4		
Off-state leakage current	I_D	V_D=$V_{DRM(max)}$ T_j=125℃			0.1	0.5	mA
Critical rate of rise of off-state current	t_{gt}	I_{TM}=16A V_D=$V_{DRM(max)}$ I_G=0.1A dI_g/dt=5A/μs			2.0		μs
Repetitive peak off-state current	dV_D/dt	V_{DM}=67% $V_{DRM(MAX)}$ T_j=125℃			150		V/μs

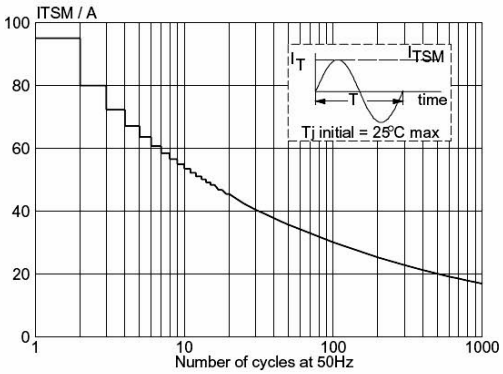
Electrical Characteristic Curve

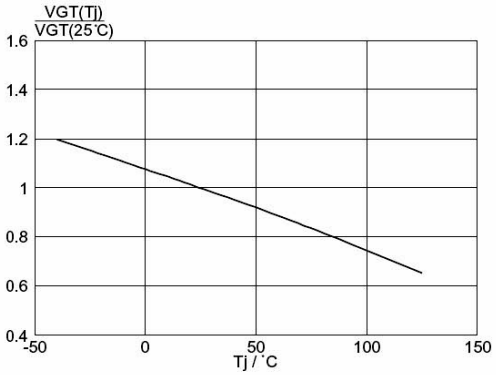






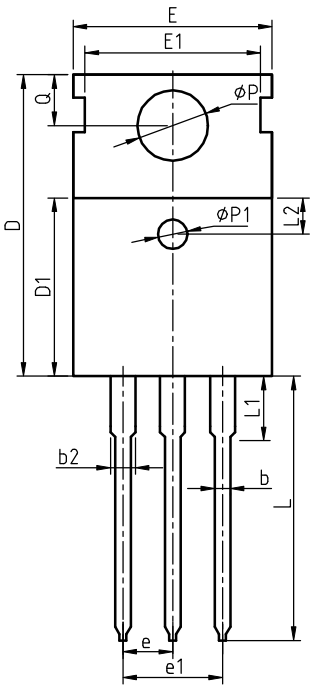


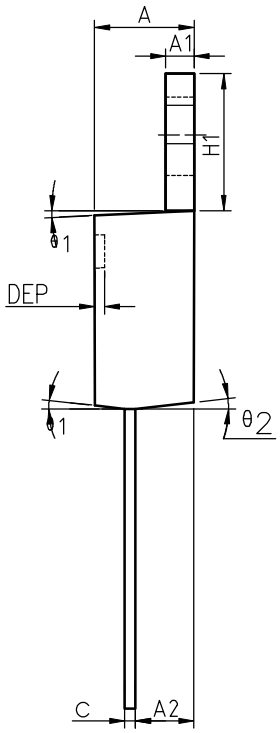


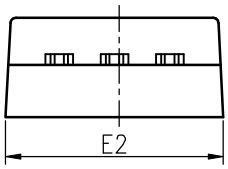


Package Information

TO-220







COMMON DIMENSIONS

SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	-	8.70	-	-	0.343	-
E2	9.80	10.00	10.20	0.386	0.394	0.402
e		2.54	BSC		0.100	BSC
e1		5.08	BSC		0.200	BSC
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	-	3.10	3.30	-	0.122	0.130
L2		2.50	REF		0.098	REF
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
θ1	5°	7°	9°	5°	7°	9°
θ2	1°	3°	5°	1°	3°	5°
θ3	1°	3°	5°	1°	3°	5°

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