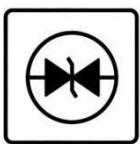




ESD



TVS



TSS



MOV



GDT



PLED

BT138-800x-MS(220)

Product specification

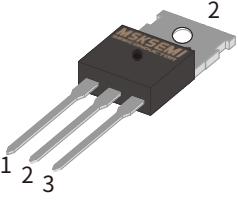
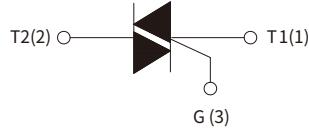
FEATURES

- High current 12 A RMS current Triac
- Low thermal resistance
- High commutation or very high commutation capability

APPLICATIONS

- General purpose motor control circuits
- Phase control operations in light dimmers and motor speed controllers
- Home appliances

Reference News

TO-220	Schematic Symbol	MARKING
		

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$)	V_{DRM}	800	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)	V_{RRM}	800	V
RMS on-state current ($T_c=105^\circ\text{C}$)	I_{TRMS}	12	A
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$)	I_{TSM}	95	
I_t value for fusing ($t_p=10\text{ms}$)	I_t	45	A^2S
Critical rate of rise of on-state current ($I_G=2*I_{\text{GT}}$)	I - II-III	di/dt	$\text{A}/\mu\text{s}$
	IV		
Peak gate current	I_{GM}	2	A
Average gate power dissipation	$P_{\text{G(AV)}}$	0.5	W
Peak gate power	P_{GM}	5	W
Operating junction temperature range	T_j	-40~+125	$^\circ\text{C}$
Storage junction temperature range	T_{STG}	-40~+150	

ELECTRICAL CHARACTERISTICS ($T_j=25^\circ\text{C}$ unless otherwise specified)

Symbol	Test Condition	Quadrant	Value				Unit
			D	E	F	G	
I_{GT}	$V_D=12\text{V}, R_L=33\Omega$	I - II-III	≤ 5	≤ 10	≤ 25	≤ 50	mA
		IV	≤ 10	≤ 25	≤ 70	≤ 100	
V_{GT}		ALL	≤ 1.5				V
V_{GD}	$V_D=V_{DRM}, R_L=3.3\text{K}\Omega, T_j=125^\circ\text{C}$	ALL	≥ 0.2				V
I_H	$I_T=100\text{mA}$		≤ 10	≤ 25	≤ 30	≤ 60	mA
I_L	$I_G=1.2I_{GT}$	I - III- IV	≤ 15	≤ 30	≤ 40	≤ 60	
		II	≤ 20	≤ 40	≤ 80	≤ 90	
dV_D/dt	$V_D=67\%V_{DRM}, T_j=125^\circ\text{C}$		≥ 20	≥ 50	≥ 50	≥ 200	V/ μs
V_{TM}	$I_{TM}=15\text{A}, tp=380\mu\text{s}$		≤ 1.6				V
I_{DRM}	$V_D=V_{DRM}, V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	≤ 5				uA
I_{RRM}		$T_j=125^\circ\text{C}$	≤ 1				mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case(AC)	1.4	°C/W

PARAMETER CHARACTERISTIC CURVE

FIG.1 Maximum power dissipation versus RMS on-state current

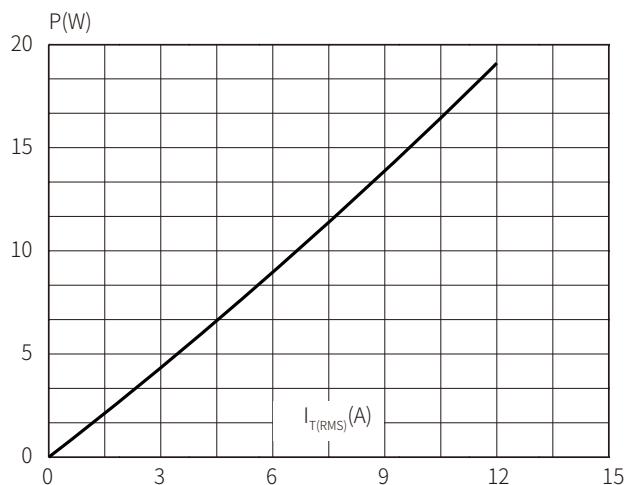


FIG.2: RMS on-state current versus case temperature

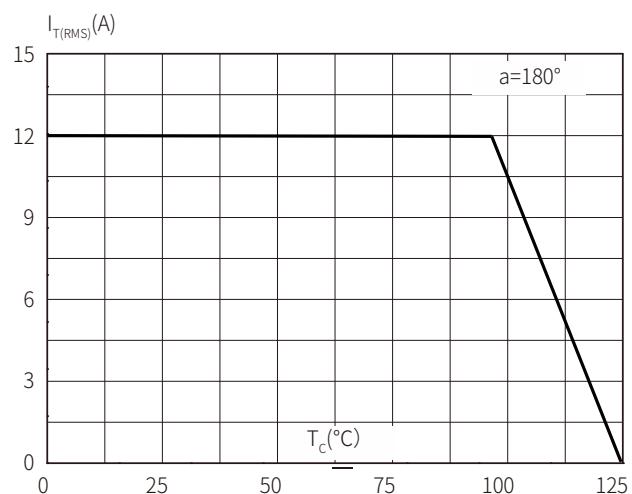


FIG.3: Surge peak on-state current versus number of cycles

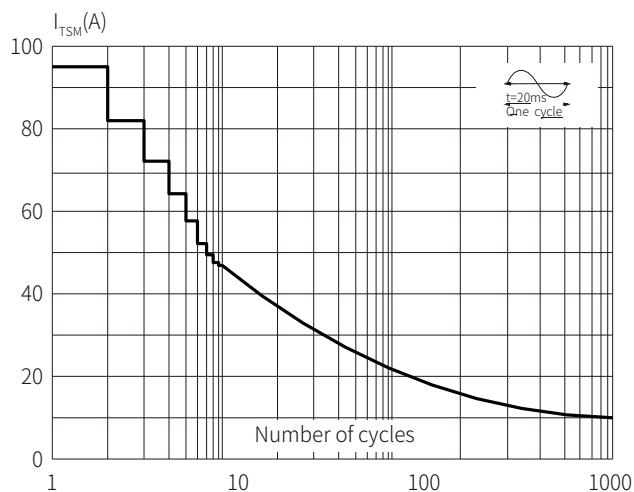


FIG.4 On-state characteristics (maximum values)

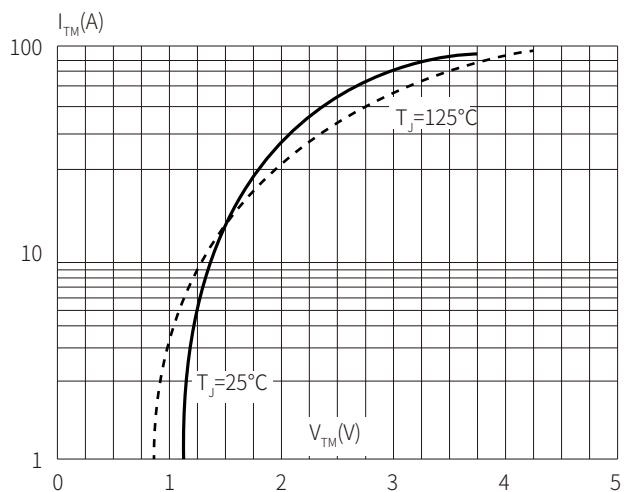


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t (I - II - III: $di/dt < 50\text{A}/\mu\text{s}$; IV: $di/dt < 10\text{A}/\mu\text{s}$)

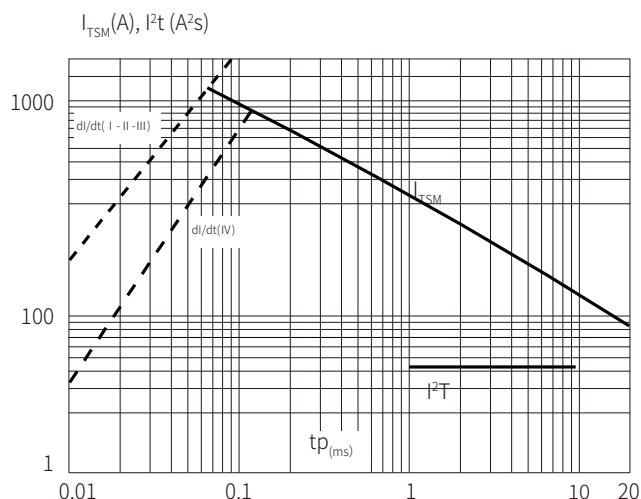


FIG.6: Relative variations of gate trigger current versus junction temperature

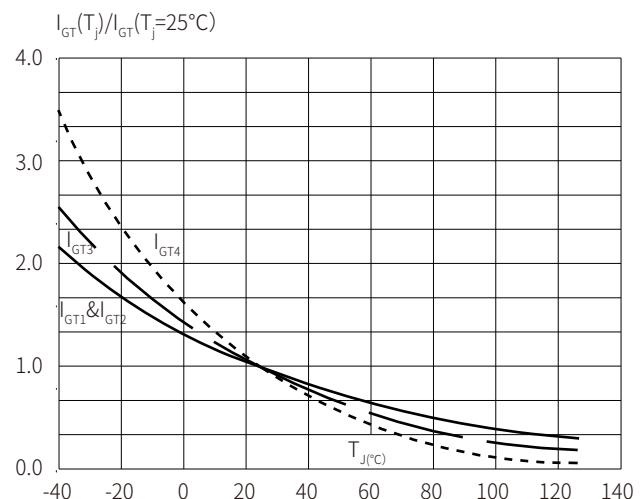


FIG.7 Relative variations of holding current versus junction temperature

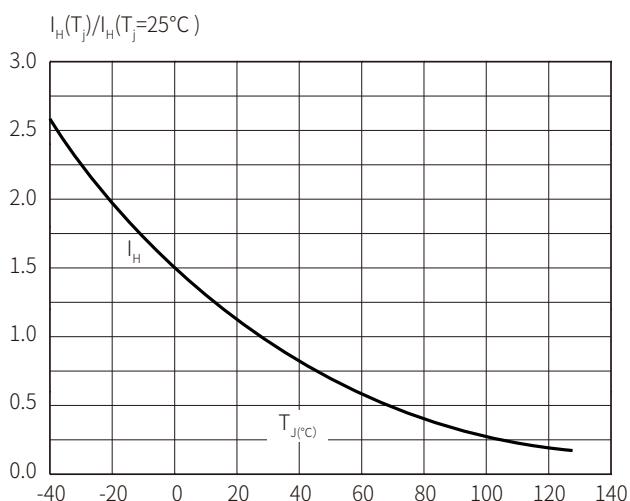
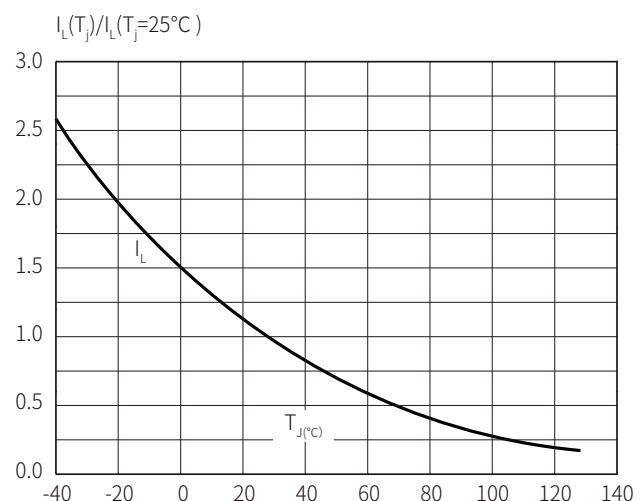
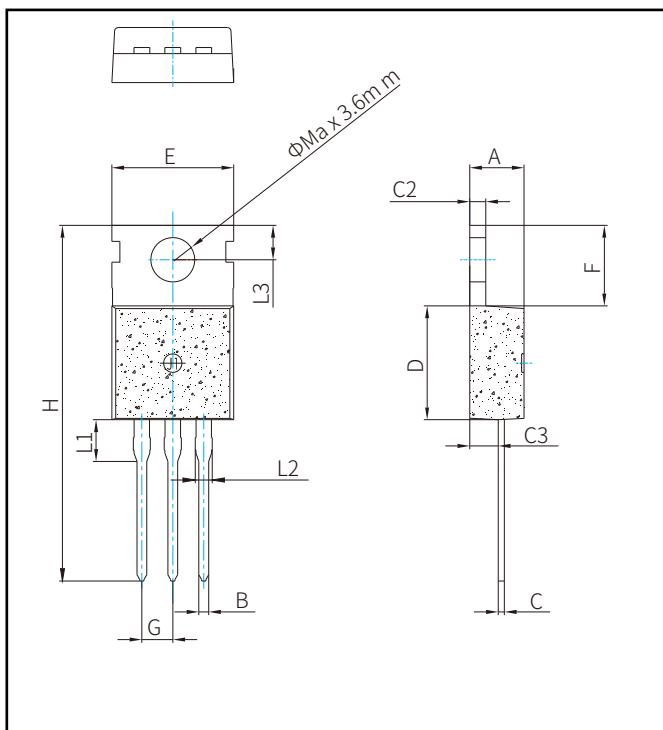


FIG.8 Relative variations of atching current versus junction temperature



TO-220 PACKAGE MECHANICAL DATA


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.70	0.169		0.185
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.80		10.0	0.346		0.394
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		30.0	1.102		1.181
L1		3.65			0.144	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
ϕ		3.6			0.142	

Order information

P/N	PKG	QTY
BT138-800D-MS(220)	TO-220	1000PCS
BT138-800E-MS(220)	TO-220	1000PCS
BT138-800F-MS(220)	TO-220	1000PCS
BT138-800G-MS(220)	TO-220	1000PCS

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