

**12A 4Quadrants TRIACs**

**Product Summary**

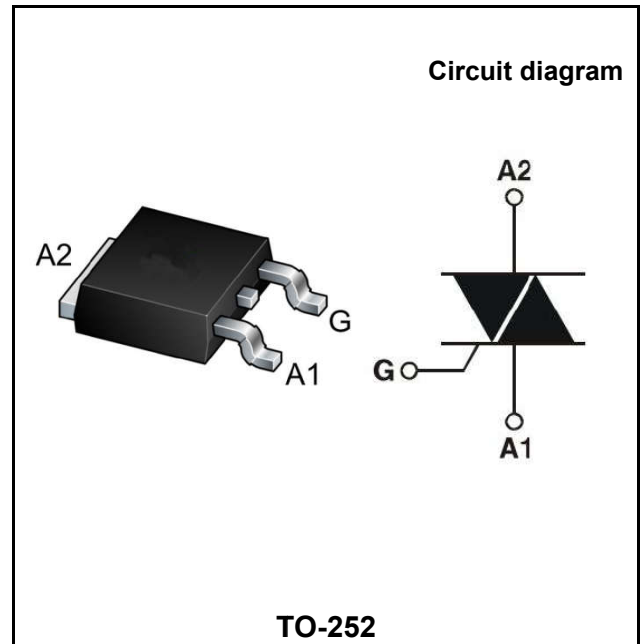
Symbol	Value	Unit
$I_{T(RMS)}$	12	A
$V_{DRM} V_{RRM}$	600/800	V
$V_{TM}$	1.55	V

**Features**

With high ability to withstand the shock loading of large current, With high commutation performances, 4 quadrants products especially recommended for use on inductive load.

**Application**

Washing machine, vacuums, massager, solid state relay, AC Motor speed regulation and so on.



**Order Information**

Part Number	Package	Marking	Delivery Form	Delivery Quantity
BT138D	TO-252	BT138 800E XXXX	12" T&R	2500PCS/Tape

**Absolute maximum ratings (Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Repetitive peak off-state voltage	$V_{DRM}$	600/800	V
Repetitive peak reverse voltage	$V_{RRM}$	600/800	V
RMS on-state current	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	$I_{TSM}$	95	A
$I^2t$ value for fusing (tp=10ms)	$I^2t$	45	A <sup>2</sup> s
Critical rate of rise of on-state current ( $I_G = 2 \times I_{GT}$ )	$di_T/dt$	I - II - III	50
		IV	10
Peak gate current	$I_{GM}$	2	A
Average gate power dissipation	$P_G (AV)$	0.5	W
Junction Temperature	$T_J$	-40~+125	°C
Storage Temperature	$T_{STG}$	-40 ~+150	°C

**Electrical characteristics (TA=25°C, unless otherwise noted)**

Parameter	Symbol	Test Condition	Value		Unit	
			Min	Max		
Gate trigger current	$I_{GT}$	$V_D=12V$ $I_T=0.1A$ $T_j=25^\circ C$	I - II -III	-	10	mA
			IV	-	25	
Gate trigger voltage	$V_{GT}$	I - II -III-IV	-	1.3	V	
Gate non-trigger voltage	$V_{GD}$	$V_D = V_{DRM}$ $T_j=125^\circ C$	0.2	-	V	
Latching current	$I_L$	$V_D = 12V$ $I_{GT}=0.1A$ $T_j=25^\circ C$	I -III-IV	-	30	mA
			II	-	40	
Holding current	$I_H$	I - II -III-IV	-	30	mA	
Critical-rate of rise of commutation voltage	$dV_D/dt$	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ C$	20	-	V/us	

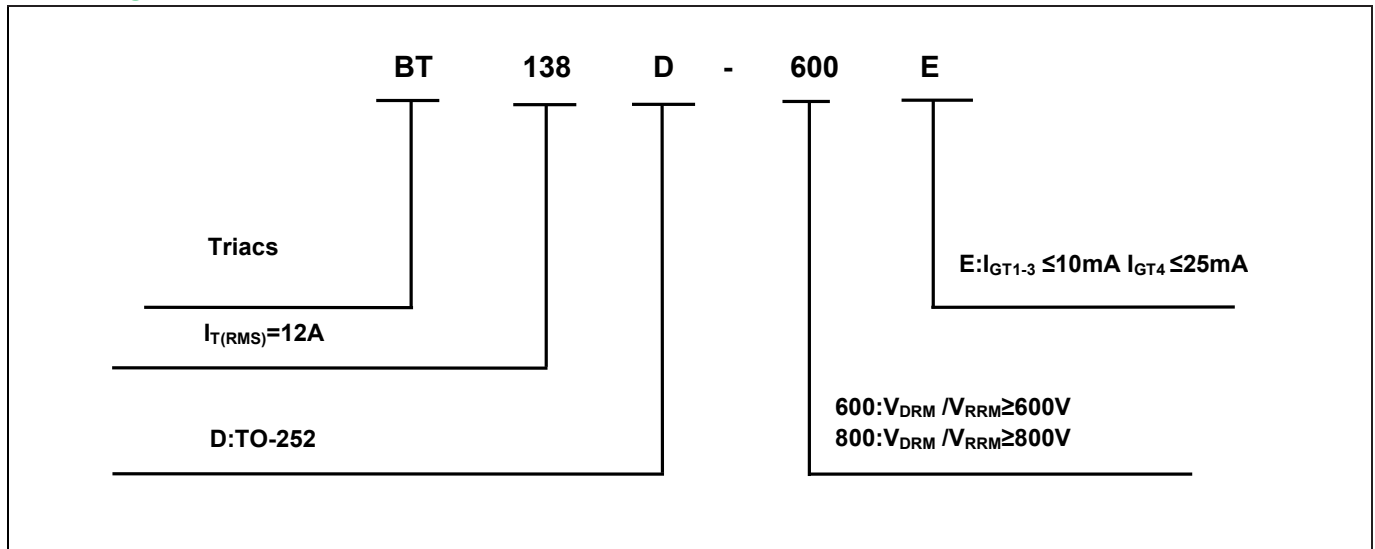
**STATIC CHARACTERISTICS**

Forward "on" voltage	$V_{TM}$	$I_{TM} = 15A$ $t_p=380\mu s$	-	1.55	V	
Repetitive Peak Off-State Current	$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$	-	10	$\mu A$
Repetitive Peak Reverse Current	$I_{RRM}$		$T_j=125^\circ C$	-	1	mA

**THERMAL RESISTANCES**

Thermal resistance	$R_{th(j-c)}$	Junction to case(AC)	TYP.	1.4	$^\circ C/W$
	$R_{th(j-a)}$	Junction to ambient	TYP.	70	$^\circ C/W$

**Ordering Information**



**Typical Characteristics**

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

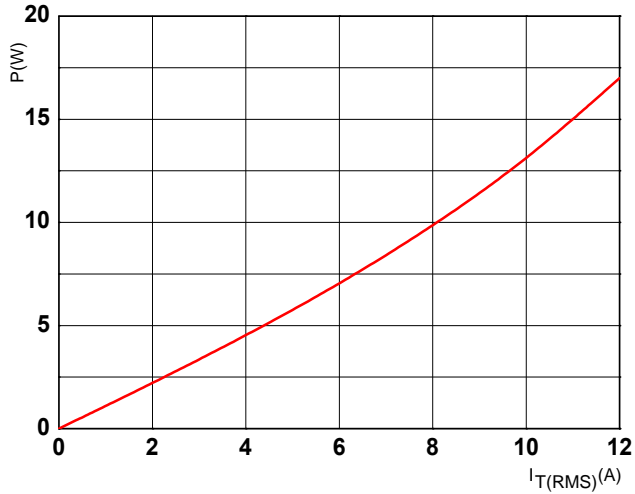


FIG.2: RMS on-state current versus case temperature (full cycle)

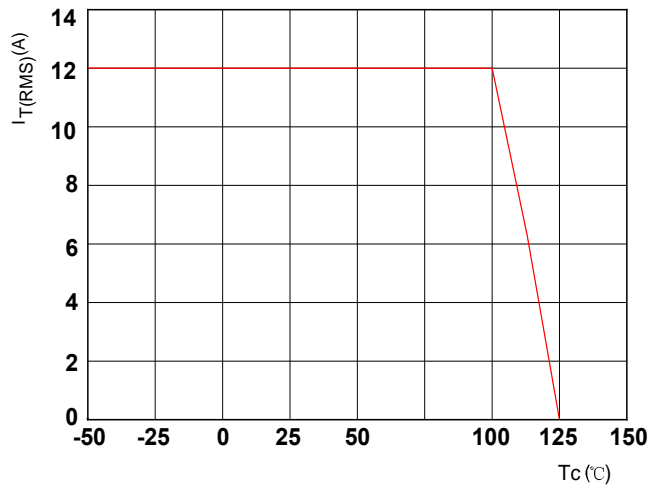


FIG.3: Surge peak on-state current versus number of cycles

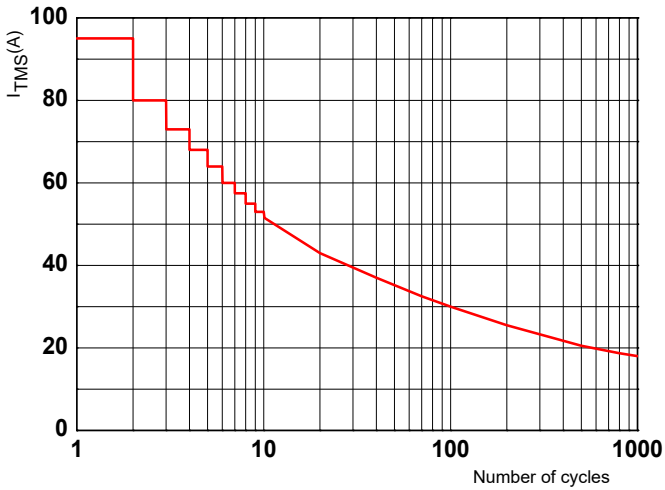


FIG.4: On-state characteristics (maximum values)

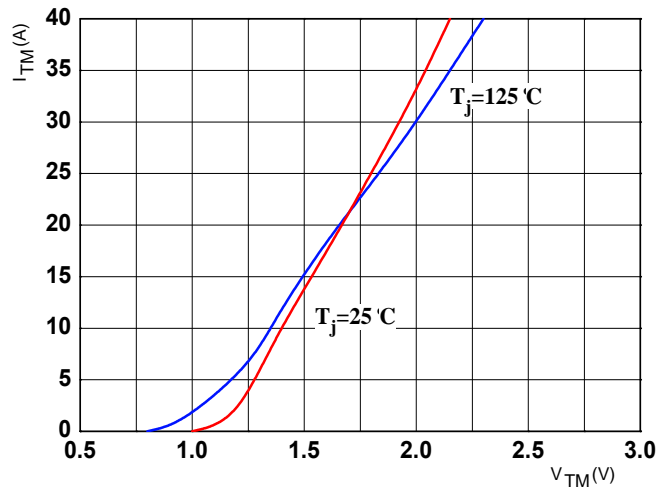


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$

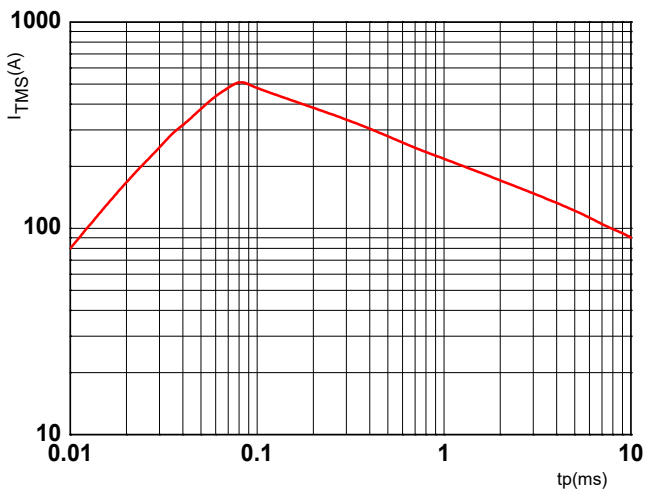
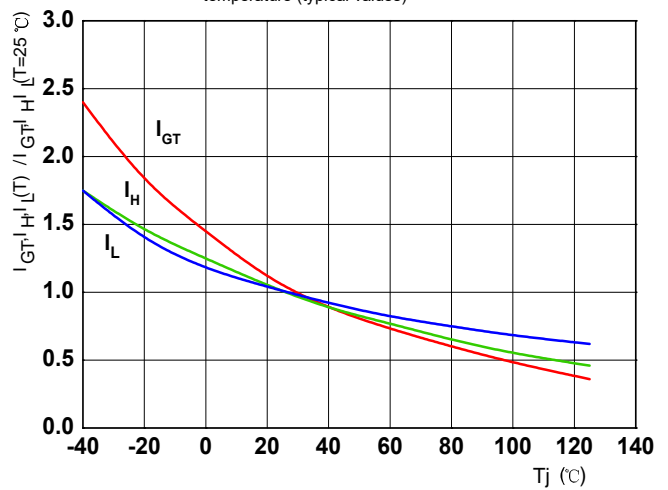


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



Package Information

TO-252

