

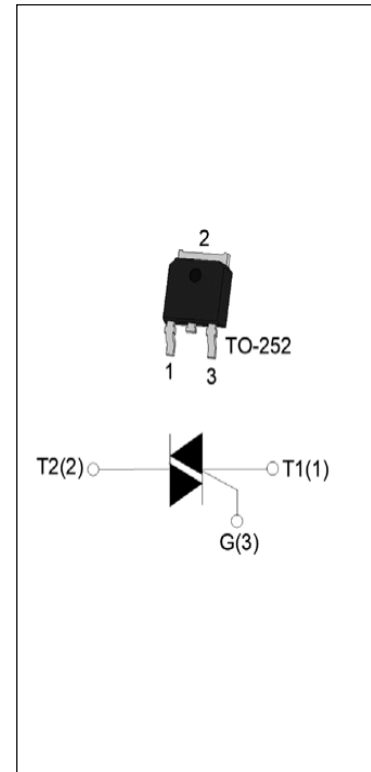
BT138D-800E
MAIN FEATURES 4Q TRIAC

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	800	V
$I_{GT1/2/3}$	10/10/10/25	mA

DESCRIPTION:

The BT138D-800E triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers.

Package TO-252 is RoHS compliant.


ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	°C
Operating junction temperature range	T_j	-40-125	°C
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 ($T_c \leq 90^\circ\text{C}$)	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current (full cycle , $t_p=10\text{ms}$, $T_j=25^\circ\text{C}$)	I_{TSM}	120	A
I^2t value for fusing ($t_p=10\text{ms}$, $T_j=25^\circ\text{C}$)	I^2t	72	A^2s
Critical rate of rise of on-state current ($T_j=125^\circ\text{C}$)	di/dt	50	$\text{A}/\mu\text{s}$
Peak gate current ($t_p=20\mu\text{s}$, $T_j=125^\circ\text{C}$)	I_{GM}	4	A
Average gate power dissipation ($T_j=125^\circ\text{C}$)	$P_{G(AV)}$	10	W

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

Symbol	Test Condition	Quadrant	Value		Unit
I_{GT}	$V_D=12\text{V}$ $R_L=100\Omega$	I - II - III	MAX.	10	mA
		IV		25	
V_{GT}		ALL	MAX.	1	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^\circ\text{C}$ $R_L=100\Omega$	ALL	MIN.	0.2	V
I_L	$I_G=1.2I_{GT}$	I - III - IV	MAX.	60	mA
		II		100	
I_H	$I_T=500\text{mA}$		MAX.	60	mA
dV/dt	$V_D=2/3V_{DRM}$ $T_j=125^\circ\text{C}$		MIN.	500	V/ μs
$(dI/dt)_c$	$T_j=125^\circ\text{C}$		MIN.	8	A/ms

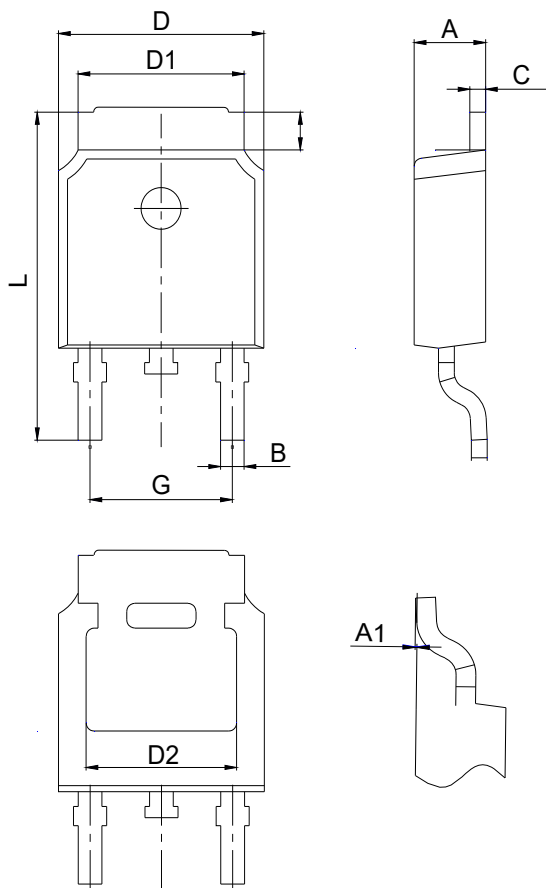
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=32\text{A}$	$T_j=25^\circ\text{C}$	1.50	V
V_{TO}	Threshold voltage	$T_j=125^\circ\text{C}$	0.86	V
R_D	Dynamic resistance	$T_j=125^\circ\text{C}$	36.6	m Ω
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	μA
I_{RRM}		$T_j=125^\circ\text{C}$	1	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	1.25	$^\circ\text{C}/\text{W}$

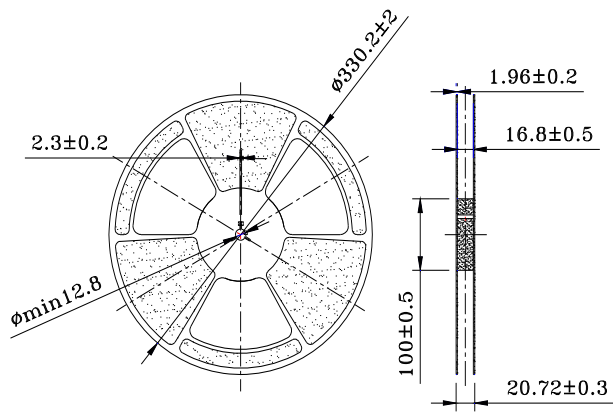
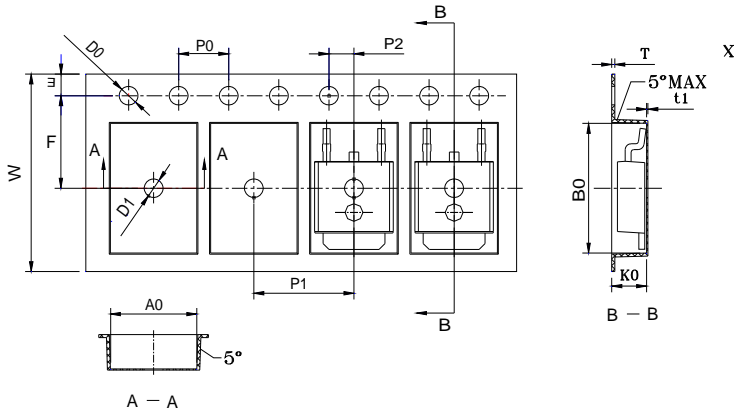
PACKAGE MECHANICAL DATA



TO-252

Ref.	Dimensions		
	Millimeters		
	Min.	Typ.	Max.
A	2.200	/	2.400
A1	/	/	0.127
B	0.635	/	0.770
C	0.460	/	0.580
D	5.100	/	5.460
D1	6.000	/	6.200
D2	4.830REF		
G	12.000	12.100	12.200
L	0.600	/	1.000

DELIVERY MODE



Ref.	Dimensions		
	Millimeters		
	Min.	Typ.	Max.
W	15.90	16.00	16.10
E	1.65	1.75	1.85
F	7.40	7.50	7.60
D0	1.50	1.55	1.60
D1	1.50	/	/
P0	3.90	4.00	4.10
P1	7.90	8.00	8.10
P2	1.90	2.00	2.10
10P0	39.8	40.00	40.20
A0	6.80	6.90	7.00
B0	10.40	10.50	10.60
K0	2.60	2.70	2.80
T	0.25	0.30	0.35
t1	0.10	/	/

PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)
TO-252	TAPING	2,500	5,000

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

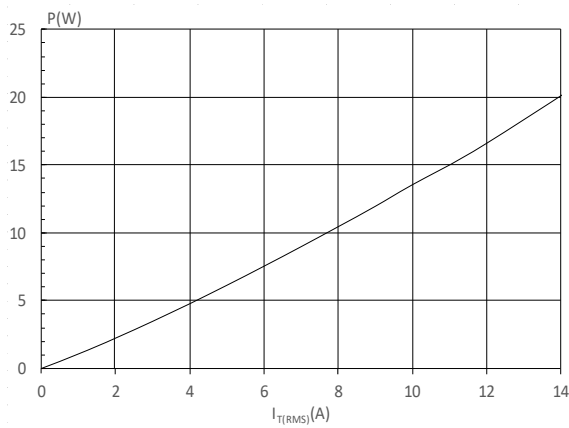


FIG.2: RMS on-state current versus case temperature

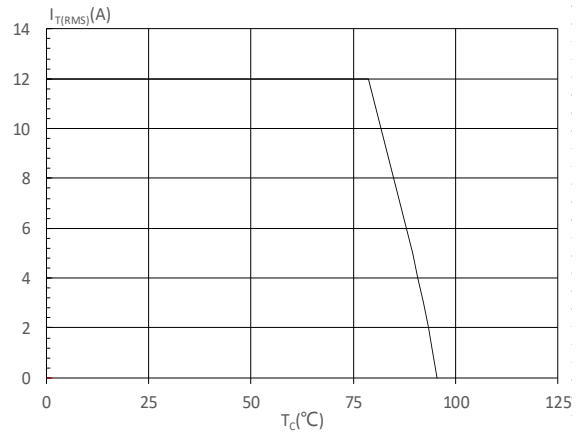


FIG.3: Surge peak on-state current versus number of cycles

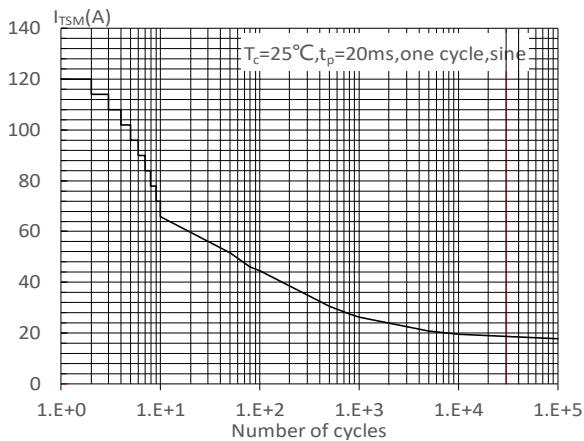


FIG.4: On-state characteristics

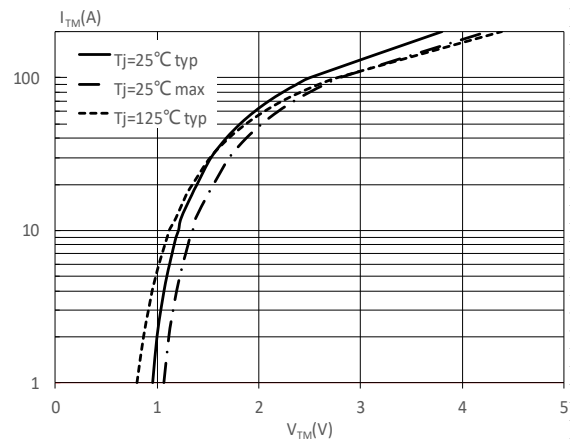


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t (I - II : $di/dt < 80\text{A}/\mu\text{s}$; III-IV : $di/dt < 40\text{A}/\mu\text{s}$)

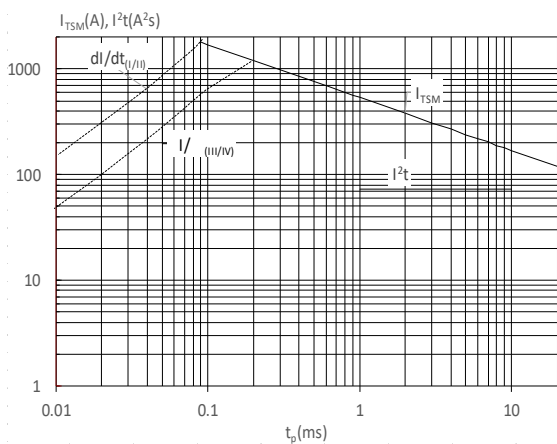
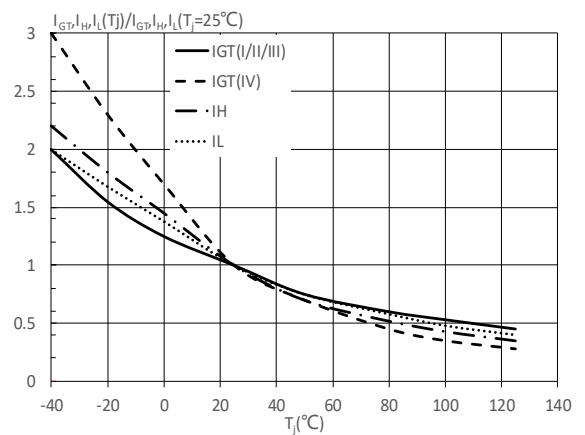


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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[>>ZG\(中鑫半导体\)](#)