

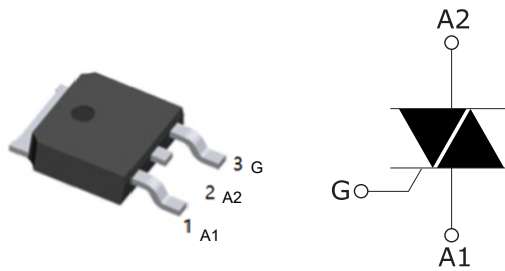
1. Description

NPNN five-layer structure of silicon bidirectional devices; with independent intellectual property rights of single-sided digging technology, table glass passivation process; multi-layer metallized electrodes on the back; with high blocking voltage and high temperature stability.

2. Features

vacuum cleaners, power tools and other motor speed controllers; solid state relays; heating controllers (temperature regulation); other phase control circuits.

3. Pinning Information



TO-252



4. Absolute maximum ratings ($T_J=25^\circ\text{C}$ unless otherwise stated)

Parameter			Symbol	Values	Units
RMS on-state current (full sine wave)	BTA	$T_C=80^\circ\text{C}$	$I_{T(RMS)}$	12	A
	BTB	$T_C=90^\circ\text{C}$			
Non repetitive surge peak on-state current (full cycle, T_J initial = 25°C)	F=50HZ, $t_p=20\text{ms}$		I_{TSM}	120	A
$I^2 t$ value for fusing	$t_p=10\text{ms}$		$I^2 t$	72	A^2S
Critical rate of rise of on-state current $I_G=2 \times I_{GT}$, $t_r \leq 100\text{ns}$	$T_J=125^\circ\text{C}$		di/dt	50	A/ μs
Off state repetitive peak voltage Reverse repetitive peak voltage	$T_J=25^\circ\text{C}$		V_{DRM}/V_{RRM}	800	V
Peak gate current	$t_p=20\mu\text{s}$	$T_J=150^\circ\text{C}$	I_{GM}	4	A
Average gate power dissipation	$T_J=150^\circ\text{C}$		$P_{G(AV)}$	1	W
Storage junction temperature range			T_{STG}	-40 to 150	$^\circ\text{C}$
Operating junction temperature range			T_J	-40 to 125	$^\circ\text{C}$



5.1 Electrical characteristics (3 quadrants)

Parameter	Quadrant	Range	Symbol	Values	Units
$V_D=12V$ $R_L=30\Omega$	I	MAX	I_{GT}	≤ 50	mA
	II	MAX	V_{GT}	1.5	V
$V_D=V_{DRM}$, $R_L=3.3k\Omega$, $T_J=125^\circ C$	III	MIN	V_{GD}	0.2	V
		MAX	I_H	60	mA
$I_T=100mA$		MAX	I_L	60	mA
		MAX		100	mA
$V_D = 67\% V_{DRM}$, gate open, mA, $T_J=125^\circ C$		MIN	dv/dt	500	V/us
Critical rise rate of commutation voltage $T_J=150^\circ C$		MIN	(dv/dt) _c	8	V/us

5.2 Electrical characteristics (4 quadrants)

Parameter	Quadrant	Range	Symbol	value	Units
$V_D=12V$ $R_L=30\Omega$	I - II - III	MAX	I_{GT}	I II III	IV
		MAX		≤ 50	≤ 120
$V_D=V_{DRM}$, $R_L=3.3k\Omega$, $T_J=125^\circ C$	IV	MAX	V_{GT}	1.5	V
		MIN	V_{GD}	0.2	V
$I_T=500mA$		MAX	I_H	60	mA
$I_G=1.2 \times I_{GT}$		MAX	I_L	60	mA
		MAX		100	mA
$V_D = 67\% V_{DRM}$, gate open, mA, $T_J=125^\circ C$		MIN	dv/dt	500	V/us
Critical rise rate of commutation voltage $T_J=150^\circ C$		MIN	(dv/dt) _c	10	V/us

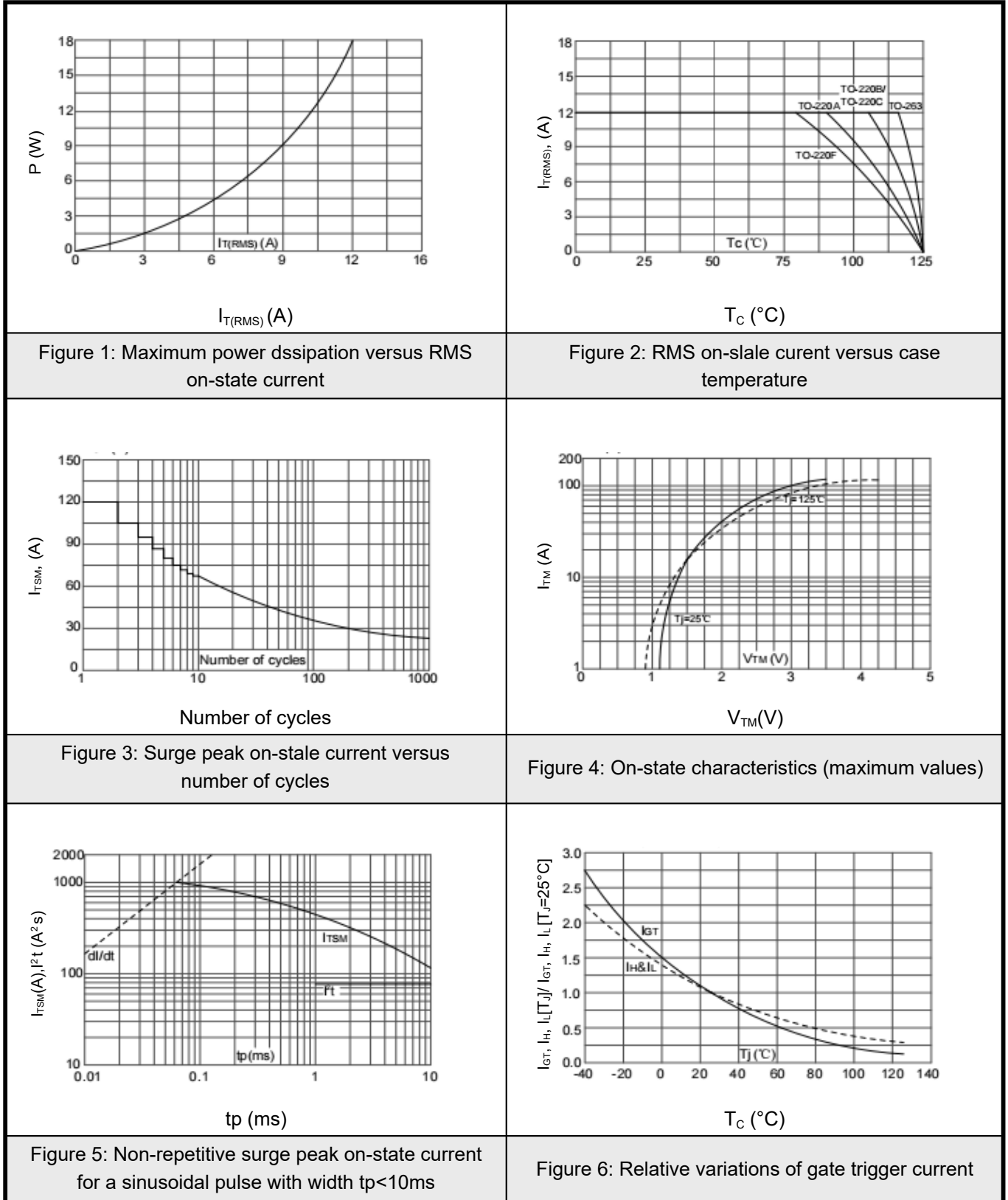


6.Static Parameters

Parameter			Symbol	Values	Units
$I_{TM}=24A$	$T_J=25^{\circ}C$	MAX	V_{TM}	1.55	V
threshold on-state voltage	$T_J=150^{\circ}C$	MAX	V_{T0}	0.86	V
Dynamic resistance	$T_J=150^{\circ}C$	MAX	Rd	36.6	mΩ
$V_{DRM}=V_{RRM}$	$T_J=25^{\circ}C$	MAX	I_{DRM}, I_{RRM}	5	μA
	$T_J=150^{\circ}C$	MAX		1	mA
Junction to ambient	BTA		$R_{th(j-c)}$	2.05	$^{\circ}C/W$
	BTB			1.25	$^{\circ}C/W$

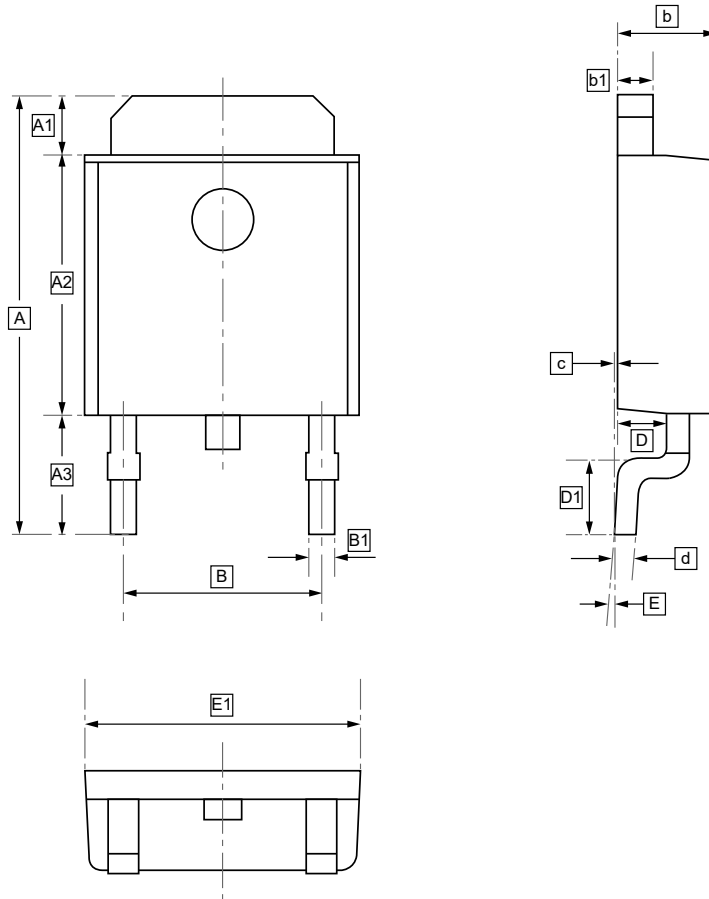


7. Typical Characteristic





8.TO-252 Package Outline Dimensions



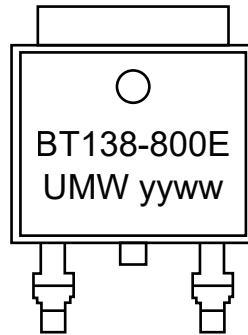
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	B	B1	b	b1	c	D	D1	d
Min	10.04	1.35	5.94	2.65	4.60	0.55	2.20	0.75	0	1.05	1.73	0.45
Max	10.44	1.45	6.14	2.95		0.65	2.40	0.85	0.15	1.25		0.55

Symbol	E	E1
Min	0°	6.40
Max	8°	6.60



9. Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW BT138D-800E	TO-252	2500	Tape and reel



10.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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