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SEMICONDUCTOR



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## BT136S-XXE(MS)

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Product specification

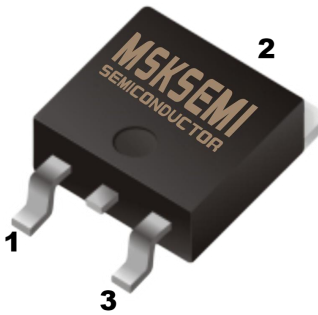
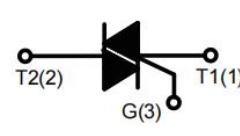


## DESCRIPTION

The BT136S-XXE(MS) series with the parallel resistor between Gate and Cathode are especially recommended for use on straight hair, igniter, anion generator, etc.

## MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
$V_{DRM} / V_{RRM}$	600/800	V

## Reference News

PACKAGE OUTLINE	Pin Configuration	Marking	
			
		BT136S-600E(MS)	BT136S-800E(MS)

Notes :XXX represents the order code.

## 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( $T_j=25^\circ\text{C}$ )	$V_{DRM}$	600/800	V
Repetitive peak reverse voltage( $T_j=25^\circ\text{C}$ )	$V_{RRM}$	600/800	V
RMS on-state current( $T_C=100^\circ\text{C}$ )	$I_{T(RMS)}$	4	A
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$ )	$I_{TSM}$	35	A
$I_{\text{t}}$ value for fusing ( $t_p=10\text{ms}$ )	$I_{\text{t}}$	6.1	$\text{A}^2\text{s}$
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ )	$dI/dt$	I - II-III	50
		IV	10
Peak gate current	$I_{GM}$	2	A
Average gate power dissipation	$P_{G(AV)}$	0.5	W
Peak gate power	$P_{GM}$	5	W

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

Symbol	Test Condition	Quadrant		Value	Unit
$I_{GT}$	$V_D=12V$	I - II-III	MAX	10	mA
		IV		25	
$V_{GT}$		ALL	MAX	1.3	V
$V_{GD}$	$V_D=V_{DRM}$ $T_j=125^\circ\text{C}$ $R_L=3.3K\Omega$	ALL	MIN	0.2	V
$I_L$	$I_G=1.2I_{GT}$	I-III	MAX	30	mA
		II-IV		45	
$I_H$	$I_T=100mA$		MAX	25	mA
$dV/dt$	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ\text{C}$		MIN	100	V/ $\mu\text{s}$
$(dV/dt)_c$	$(dI/dt)_c=1.7A/ms$ $T_j=125^\circ\text{C}$		MIN	0.5	V/ $\mu\text{s}$

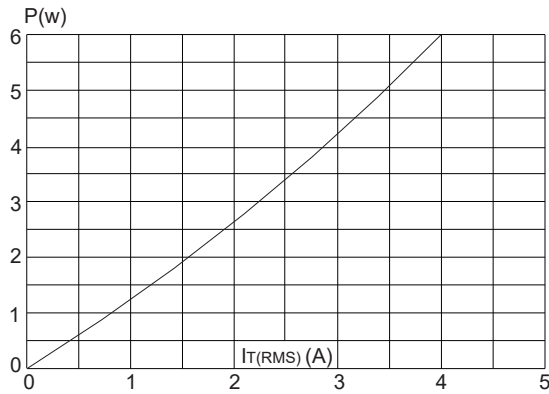
**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_{TM}=5.5A$ $t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.6	V
$I_{DRM}$	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	$\mu\text{A}$
$I_{RRM}$		$T_j=125^\circ\text{C}$	0.5	mA

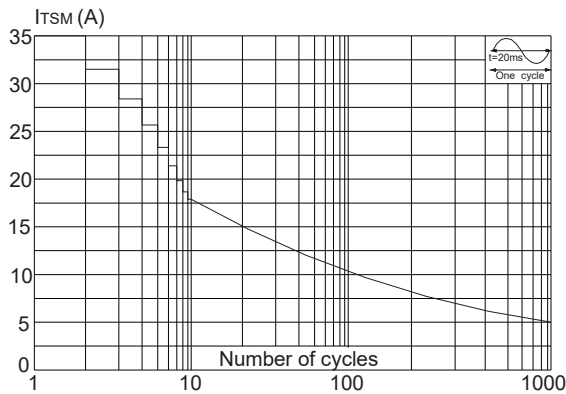
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case(AC)	2.8	$^\circ\text{C/W}$
$R_{th(j-a)}$	junction to ambient	70	$^\circ\text{C/W}$

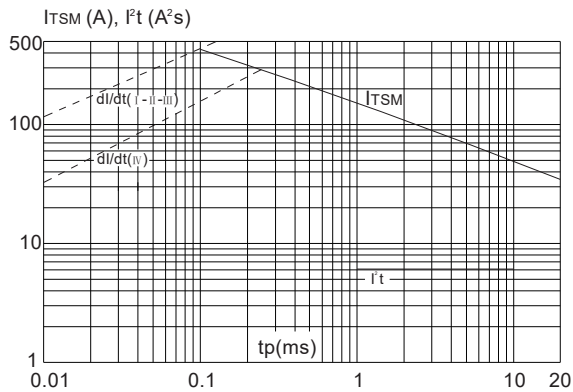
**FIG.1:** Maximum power dissipation versus RMS on-state current



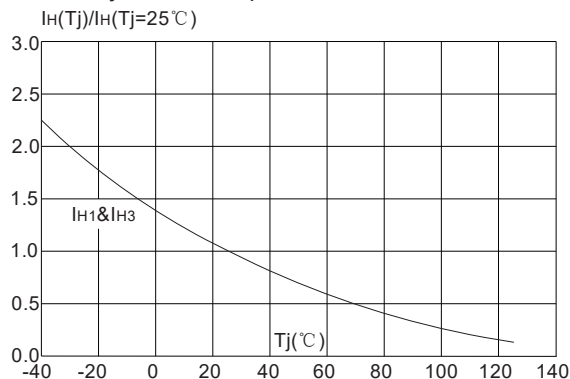
**FIG.3:** Surge peak on-state current versus number of cycles



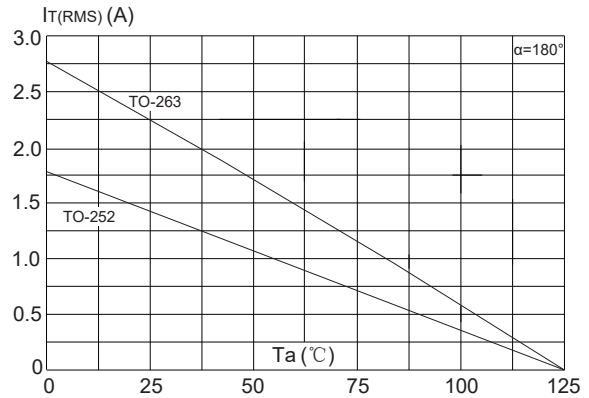
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$  and corresponding value of  $I^2t$  (I - II - III:  $dI/dt < 50\text{A}/\mu\text{s}$ ; IV:  $dI/dt < 10\text{A}/\mu\text{s}$ )



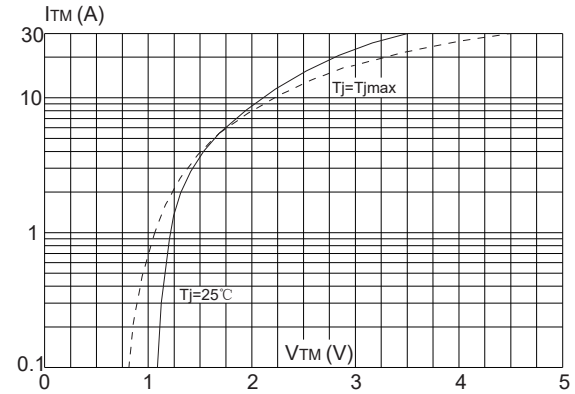
**FIG.7:** Relative variations of holding current versus junction temperature



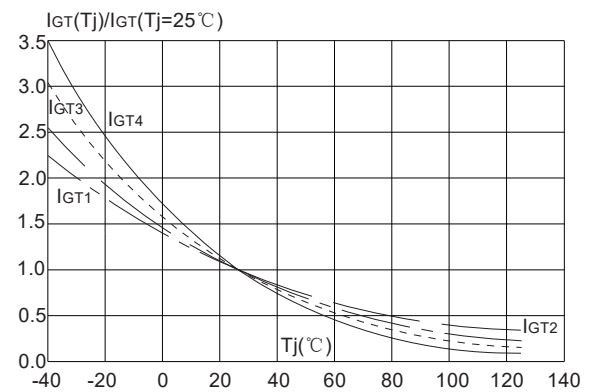
**FIG.2:** RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35μm)



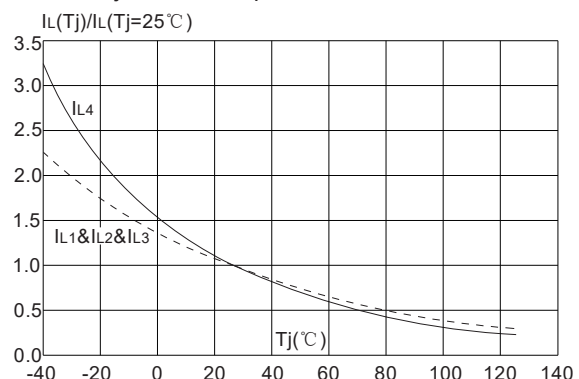
**FIG.4:** On-state characteristics (maximum values)



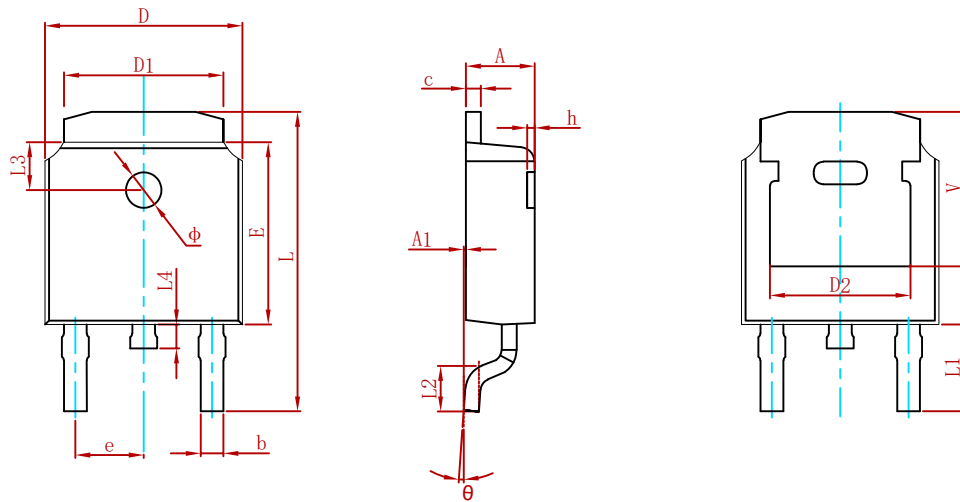
**FIG.6:** Relative variations of gate trigger current versus junction temperature



**FIG.8:** Relative variations of latching current versus junction temperature

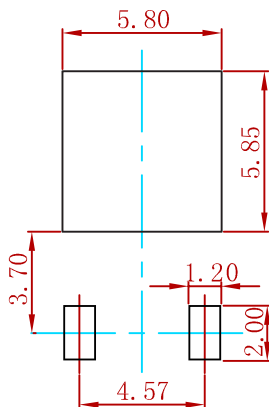


**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

**Suggested Pad Layout**



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

P/N	PKG	QTY
BT136S-XXE(MS)	TO-252	2500

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