UT08-02S06

SCR

Pb-Free RoHS COMPLIANT

VOLTAGE:	600 Volts	CURRENT:	8 Ampers	Package:	TO-252

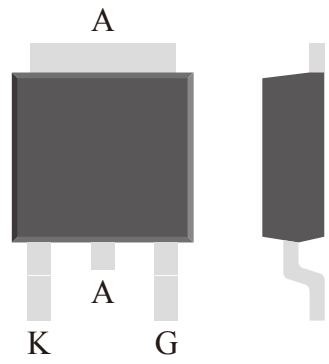
FEATURES

- Highly dv/dt For High Reliability
- Low Thermal Resistance Increases Carrying Capacity
- Strongresistance To Electromagnetic Interference.
- With High Ability To Withstand The Shock Loading Of Large Current

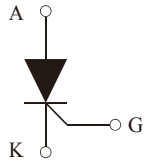
TYPICAL APPLICATIONS

- Phase Control Operation Of Light Dimmers And Motor Speed Controllers
- ON/OFF Control Operation Of Heating Regulation And Induction Motor

Diagram:



Polarity:



PRODUCT SUMMARY

Gear	Value	Unit
I_{GT}Max.	0.2	mA
V_{DRM}/V_{RRM} Min.	600	V
$I_{T(RMS)}$	8	A

Absolute Maximum Ratings (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	Ratings	Unit
Repetitive Peak Off-State Voltage		V_{DRM}	600	V
Repetitive Peak Reverse Voltage		V_{RRM}	600	V
RMS On-State Current	Tc≤ 110 ℃	$I_{T(RMS)}$	8	A
Average On-State Current	Tc≤ 110 ℃	$I_{T(AV)}$	5	
Non Repetitive Surge Peak On-State Current	F= 50 Hz,Tp= 10 ms F= 50 Hz,Tp= 8.3 ms	I_{TSM}	70 77	A
I^2T Value For Fusing	Tp= 10 ms	I^2t	25	A
Critical Rate Of Rise Of On-State Current	IG=2*IGT, tr≤100ns F=100Hz,Tj=125℃	di/dt	50	A/μs
Peak Gate Current	Tp=20μs,Tj=125℃	I_{GM}	4	A
Average Gate Power Dissipation	Tj= 125 ℃	$P_{G(AV)}$	1.0	W

Thermal Characteristcs (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	Typ.	Unit
Operating Junction Temperature Range		T_J	-40 to 125	℃
Storage Temperature Range		T_{STD}	-40 to 150	
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25℃	$R_{\theta JA}$	70	℃/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	$R_{\theta JC}$	1.3	

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Electrical Characteristcs (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Gate Trigger Current	V_D=12V,R_L=33Ω	I_{GT}	-	-	0.2	mA
Max. Gate Trigger Voltage	V_D=12V,R_L=33Ω	V_{GT}	-	-	0.8	V
Min. Gate Trigger Voltage	V_D =V_{DRM},T_j =125℃,R_L=3.3KΩ	V_{GD}	0.1	-	-	V
Holding Current	I_T= 50 mA	I_H	-	-	5.0	mA
Latching Current	I_G=1.2*I_{GT}	I_L	-	-	6.0	mA
Rise Of Off- State Voltage	V_D =2/3V_{DRM},T_j =125℃,Gate Open	dv/dt	5.0	-	-	V/us

Static Characteristcs (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	Value	Unit
Peak On-State Voltage	I_T= 16 A,Tp=380uS,Tj =25℃	V_{TM} $M_{AX.}$	1.6	V
Threshold Voltage	T_j =125℃	V_{TO} $M_{AX.}$	0.85	V
Dynamic resistance	T_j =125℃	R_D $M_{AX.}$	46	mΩ
Peak Repetitive Forward Blocking Current	V_D=V_{DRM} Tj =25℃	I_{DRM} $M_{AX.}$	5	uA
Peak Repetitive Reverse Blocking Current	V_R=V_{RRM} Tj =125℃	I_{RRM} $M_{AX.}$	1	mA

Model and identification instructions

UT 08 - 02 S 06

Productor Type
UT=SCR

Insulation Spec.:
A=Ins.=Insulation
Empty=No Ins.=No Insulation

$I_{T(RMS)}$ Spec.:
08=8A

"-"=Connection Symbol
Constant And Unchanging

IGT Spec.
02=0.2mA

Package Spec.:
S=TO-252

VDRM/VRRM Spec.:
06=600V

Temperature Spec.:
Empty=Standard Temperature
H=high temperature

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Typical Characteristics Curves

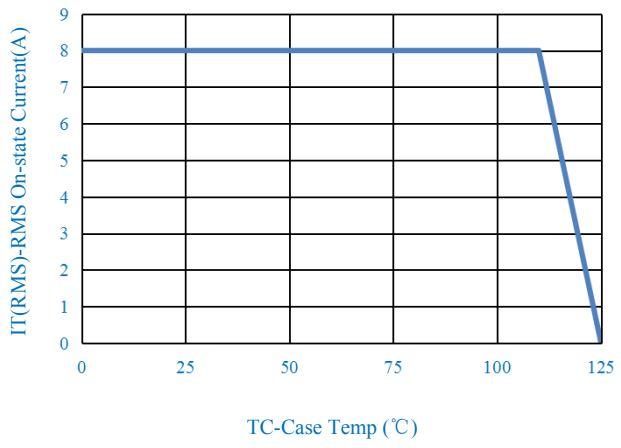

Fig.1-RMS on-state current vs. case temperature

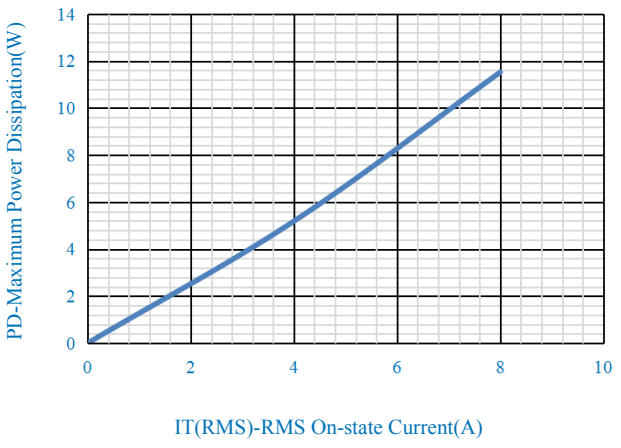

Fig.2- Maximum Power Dissipation Vs. on-state current

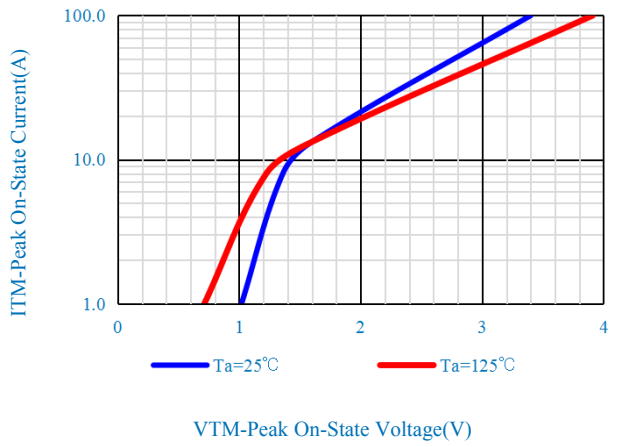

Fig.3-On-State Characteristics

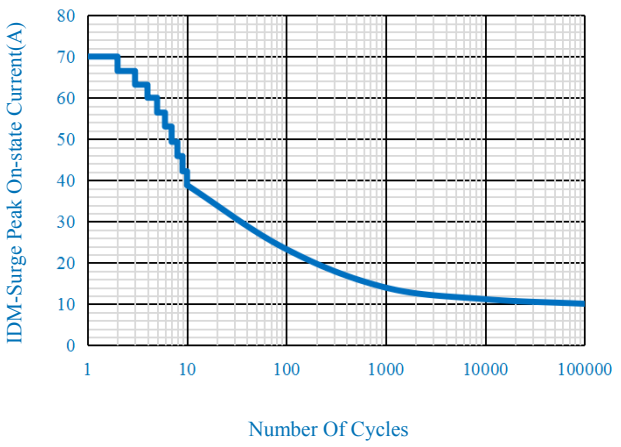

Fig.4- Surge Peak On-state Current Vs. Number Cycles

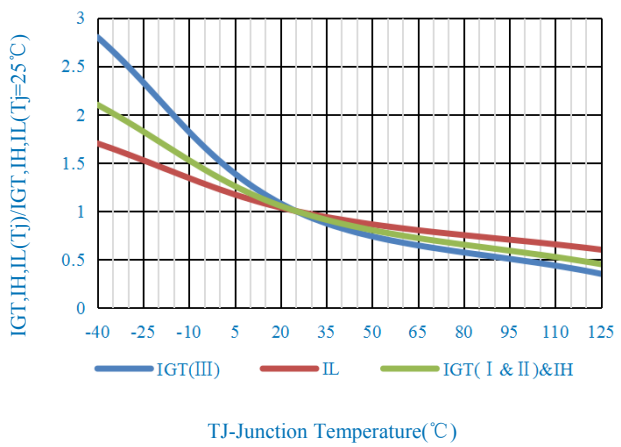

Fig.5- Relative Variation Of Gate Trigger Current , Holding Current And Latching Current Versus Junction Temperature (Typical Value)

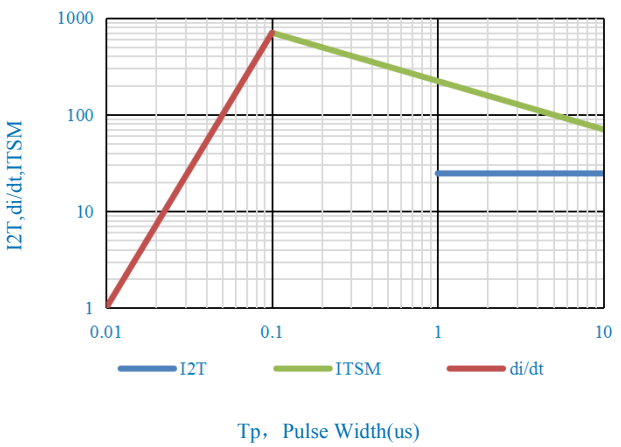

Fig.6- Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponding value of I2t (dI/dt<50A/μs)

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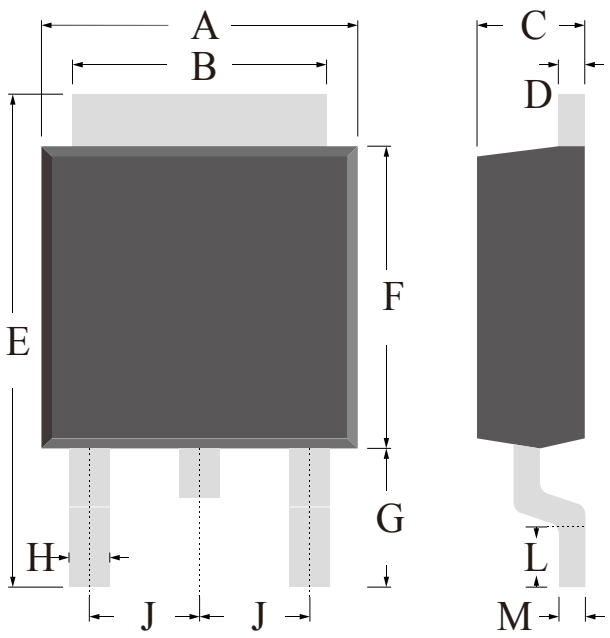
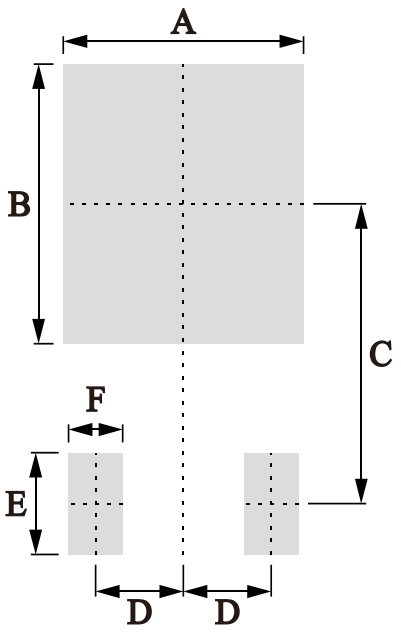
OUTLINE DRAWINGS



TO-252

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.10	-	7.10	0.2402	-	0.2795
B	4.80	-	5.80	0.1890	-	0.2283
C	1.95	-	2.55	0.0768	-	0.1004
D	0.35	-	0.75	0.0138	-	0.0295
E	9.25	-	10.75	0.3642	-	0.4232
F	5.60	-	6.60	0.2205	-	0.2598
G	2.50	-	3.10	0.0984	-	0.1220
H	0.55	-	0.85	0.0217	-	0.0335
J	2.10	-	2.50	0.0827	-	0.0984
L	1.00	-	1.40	0.0394	-	0.0551
M	0.35	-	0.75	0.0138	-	0.0295

RECOMMEDNED LAYOUT DRAWINGS



TO-252

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	6.09	-	-	0.2398	-
B	-	7.57	-	-	0.2980	-
C	-	6.64	-	-	0.2614	-
D	-	2.30	-	-	0.0906	-
E	-	2.76	-	-	0.1087	-
F	-	1.42	-	-	0.0559	-

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MARKING INFORMATION



MARKING INSTRUCTIONS

NH=Niuhang Trademark

FF=Product Line Code,According To Actual Changes

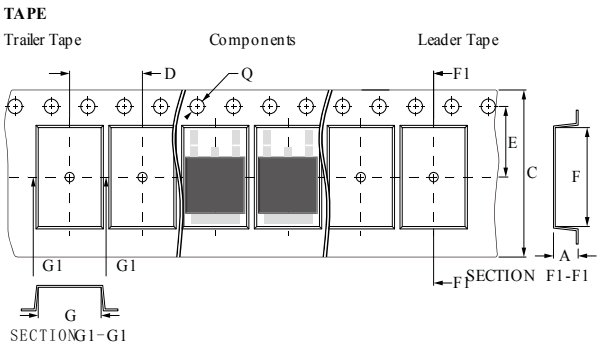
YWW=Date Code,According To Actual Changes

LLWWF=Inernal Code,According To Actual Changes

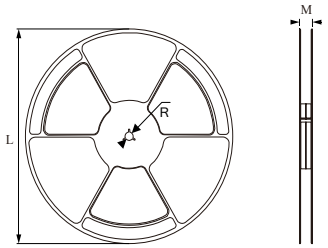
UT08-02S06=Model

PACKAGING

TAPE



REEL



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OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
TAPE						
A	2.60	-	2.80	0.1024	-	0.1102
C	15.60	-	16.40	0.6142	-	0.6457
D	7.70	-	8.30	0.3031	-	0.3268
E	7.30	-	7.70	0.2874	-	0.3031
F	10.20	-	10.80	0.4016	-	0.4252
G	6.70	-	7.10	0.2638	-	0.2795
Q Φ	1.40	-	1.60	0.0551	-	0.0630
REEL						
L	328.00	-	332.00	12.913	-	13.071
R	12.00	-	14.00	0.4724	-	0.5512
M	19.40	-	23.40	0.7638	-	0.9213

PACKING INFORMATION

Package Type	Package Code	Productor Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
TO-252	P1	0.321	13" Reel	2500	5000	30000
TO-252	P2	0.321	13" Reel	2500	2500	25000

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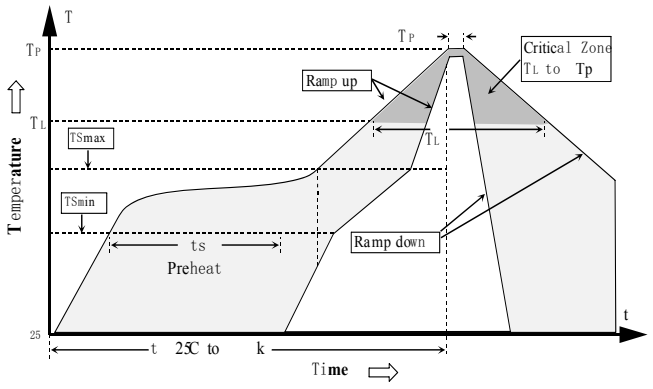
Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat−Temperature Min (TS min) −Temperature Max (TS max) −Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature (tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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Specification Revision History

Rev.	Date	Changed Items	Pre-Changed Content	Changed Content
A/1	2014-10-20	First Issue		
		Blank Below		