

UT16-25S06

SCR



VOLTAGE: 600 Volts

CURRENT: 16 Amperes

Package: TO-252

FEATURES

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

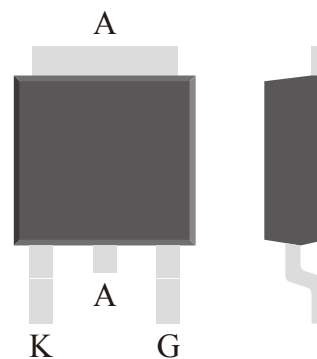
TYPICAL APPLICATIONS

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

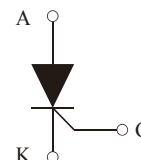
PRODUCT SUMMARY

Gear	Value	Unit
$I_{GT} \text{ Max.}$	25	mA
$V_{DRM}/V_{RRM} \text{ Min.}$	600	V
$I_{T(RMS)}$	16	A

Diagram:



Polarity:



Absolute Maximum Ratings (Ta=25°C 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	$T_c \leq 61^\circ\text{C}$	$I_{T(RMS)}$	16	A
Average On-State Current	$T_c \leq 61^\circ\text{C}$	$I_{T(AV)}$	8	
Non Repetitive Surge Peak On-State Current	$F=50 \text{ Hz}, T_p=10 \text{ ms}$	I_{TSM}	150	A
	$F=50 \text{ Hz}, T_p=8.3 \text{ ms}$		165	
I^2t Value For Fusing	$T_p=10 \text{ ms}$	I^2t	113	A
Critical Rate Of Rise Of On-State Current	$I_G=2 \cdot I_{GT}, t_r \leq 100 \text{ ns}$ $F=100 \text{ Hz}, T_j=125^\circ\text{C}$	di/dt	150	A/ μs
Peak Gate Current	$T_p=20 \mu\text{s}, T_j=125^\circ\text{C}$	I_{GM}	5	A
Average Gate Power Dissipation	$T_j=125^\circ\text{C}$	$P_{G(AV)}$	1.0	W
Peak Gate Power Dissipation		P_{GM}	20	W

Thermal Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Test Conditions	Symbol	Typ.	Unit
Operating Junction Temperature Range		T_J	-40 to 125	$^\circ\text{C}$
Storage Temperature Range		T_{STD}	-40 to 150	
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With $T_a=25^\circ\text{C}$	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	$R_{\theta JC}$	3.0	

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Electrical Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Test Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Gate Trigger Current	$V_D=12V, R_L=33\Omega$	I_{GT}	-	-	25.0	mA
Max. Gate Trigger Voltage	$V_D=12V, R_L=33\Omega$	V_{GT}	-	-	1.0	V
Min. Gate Trigger Voltage	$V_D=V_{DRM}, T_j=125^\circ C, R_L=3.3K\Omega$	V_{GD}	0.2	-	-	V
Holding Current	$I_T=500\text{ mA}$	I_H	-	-	50.0	mA
Latching Current	$I_G=1.2*I_{GT}$	I_L	-	-	60.0	mA
Rise Of Off- State Voltage	$V_D=2/3V_{DRM}, T_j=125^\circ C, \text{Gate Open}$	dv/dt	1200.0	-	-	V/us

Static Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Test Conditions	Symbol	Value	Unit
Peak On-State Voltage	$I_T=32\text{ A}, T_p=380\mu S, T_j=25^\circ C$	$V_{TM} M_{AX.}$	1.55	V
Threshold Voltage	$T_j=125^\circ C$	$V_{TO} M_{AX.}$	0.8	V
Dynamic resistance	$T_j=125^\circ C$	$R_D M_{AX.}$	24	mΩ
Peak Repetitive Forward Blocking Current	$V_D=V_{DRM}, T_j=25^\circ C$	$I_{DRM} M_{AX.}$	5	uA
Peak Repetitive Reverse Blocking Current	$V_R=V_{RRM}, T_j=125^\circ C$	$I_{RRM} M_{AX.}$	0.2	mA

Model and identification instructions

Product Type	UT	16	-	25.	S	06
UT=SCR						
Insulation Spec.: A=Ins.=Insulation Empty=No Ins.=No Insulation						
$I_{T(RMS)}$ Spec.: 16=16A						
"-."=Connection Symbol Constant And Unchanging						
IGT Spec. 25.=25mA						
Package Spec.: S=TO-252						
V_{DRM}/V_{RRM} Spec.: 06=600V						
Temperature Spec.: Empty=Standard Temperature H=high temperature						

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Typical Characteristics Curves

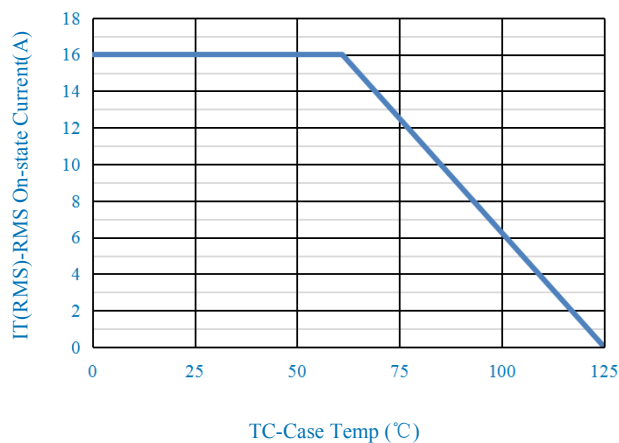


Fig.1-RMS on-state current vs. case temperature

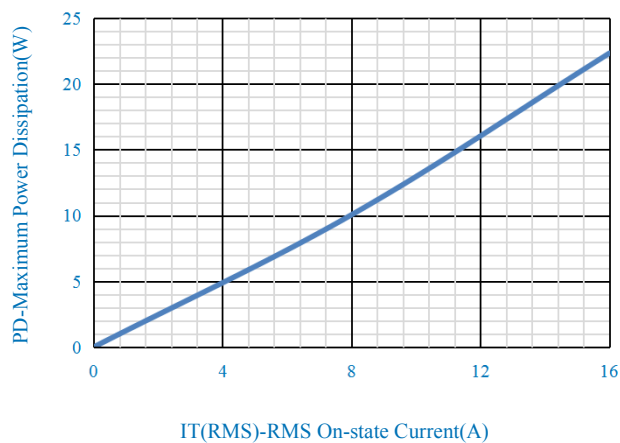


Fig.2- Maximum Power Dissipation Vs. on-state current

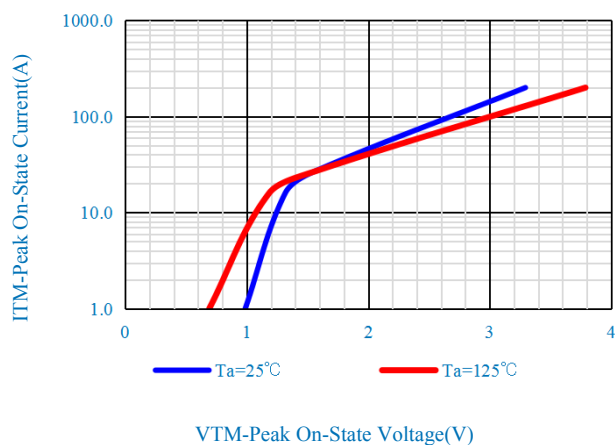


Fig.3-On-State Characteristics

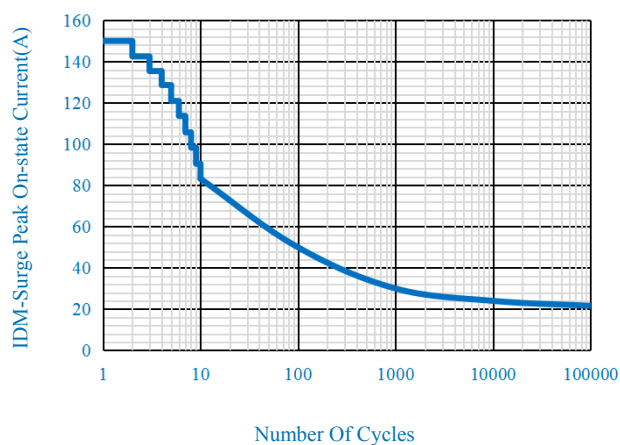


Fig.4- Surge Peak On-state Current Vs. Number Cycles

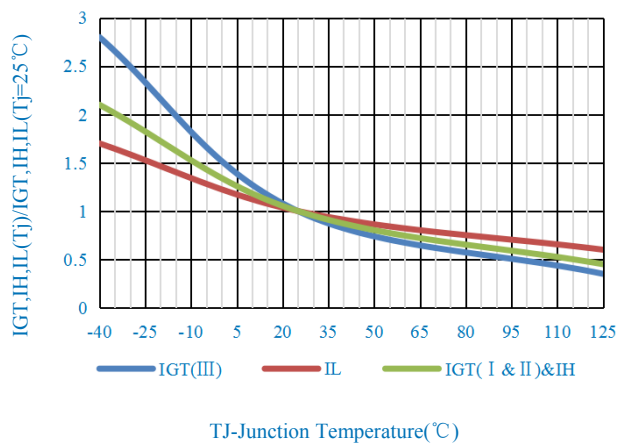


Fig.5- Relative Variation Of Gate Trigger Current , Holding Current And Latching Current Versus Junction Temperature (Typical Value)

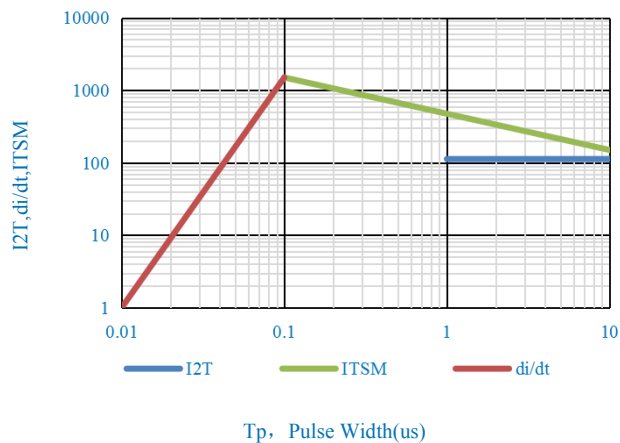
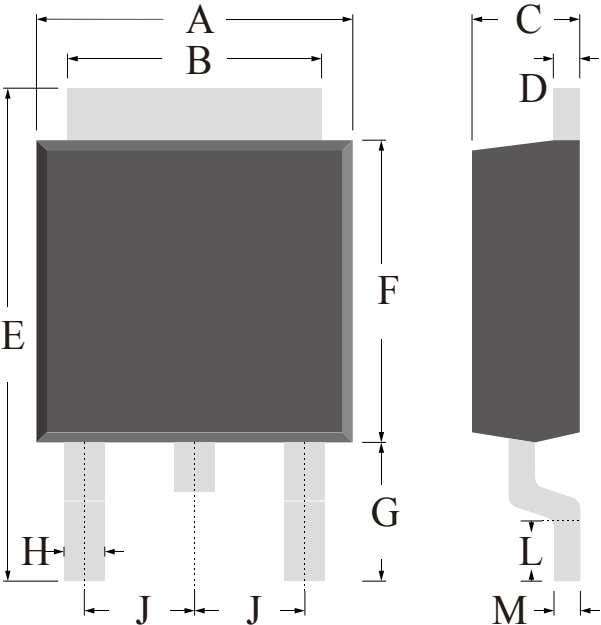


Fig.6- Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I_2t ($di/dt < 50\text{A}/\mu\text{s}$)

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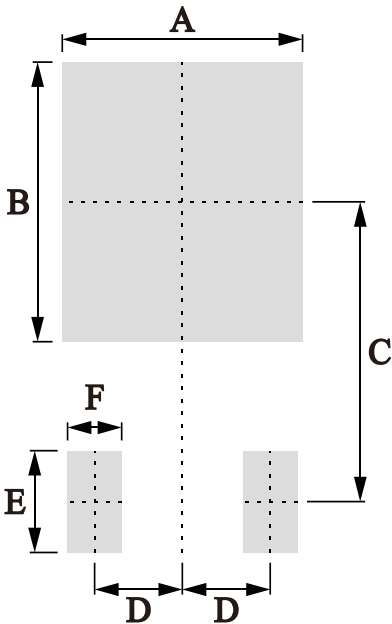
OUTLINE DRAWINGS



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

RECOMMEDND 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=Niuhan Trademark

FF=Product Line Code,According To Actual Changes

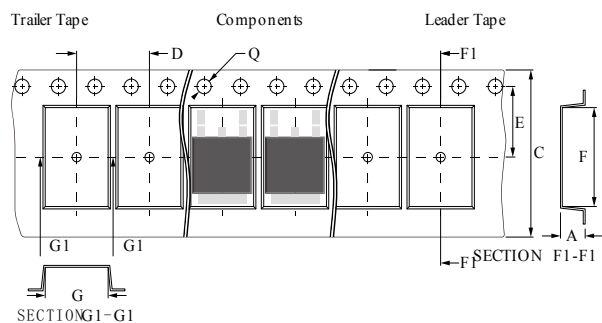
YWW=Date Code,According To Actual Changes

LLWWF=Internal Code,According To Actual Changes

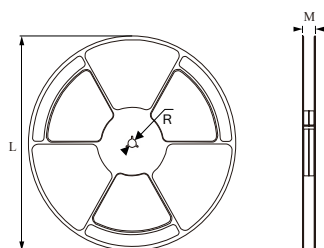
UT16-25S06=Model

PACKAGING

TAPE



REEL



TO-252

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	Product 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 (T _{smax} to T _p)	3°C/second max.	3°C/second max.
	Preheat-Temperature Min (T _S min) -Temperature Max (T _S max) -Time(t _s min to t _s max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
	Time maintained above: -Temperature (T _L) - Time (t _L)	183°C 60-150 seconds	217°C 60-150 seconds
	Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
	Time within 5°C of actual peak temperature (t _p)	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		
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