

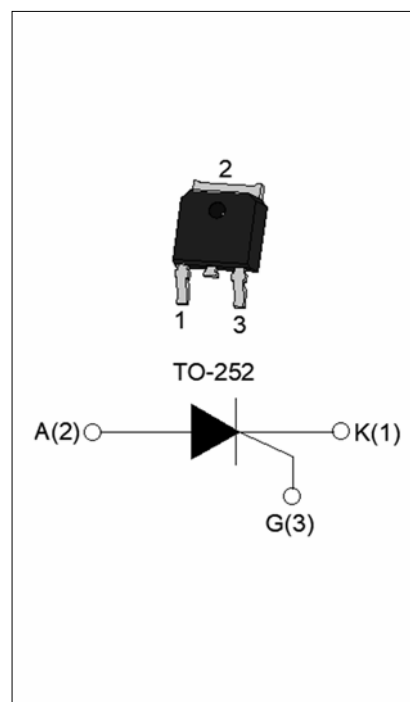


DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT1608K provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on hair straightener, motorcycle voltage regulators etc. Package TO-252 is RoHS compliant.

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	8	A
V_{DRM}/V_{RRM}	1600	V
I_{GT}	15	mA



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	
Operating junction temperature range	T_j	-40-125	
Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$)	V_{DRM}	1600	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)	V_{RRM}	1600	V
Average on-state current ($T_c = 98^\circ\text{C}$)	$I_{T(AV)}$	5	A
RMS on-state current ($T_c = 98^\circ\text{C}$)	$I_{T(RMS)}$	8	A
Non repetitive surge peak on-state current ($t_p=10\text{ms}, T_j=25^\circ\text{C}$)	I_{TSM}	80	A
Non repetitive surge peak on-state current ($t_p=8.3\text{ms}, T_j=25^\circ\text{C}$)		88	
I^2t value for fusing ($t_p=10\text{ms}, T_j=25^\circ\text{C}$)	I^2t	32	A^2s
Critical rate of rise of on-state current ($I_G=2 I_{GT}, f=100\text{Hz}, T_j=125^\circ\text{C}$)	di/dt	100	$\text{A}/\mu\text{s}$
Peak gate current ($t_p=20\mu\text{s}, T_j=125^\circ\text{C}$)	I_{GM}	4	A

Average gate power dissipation ($T_j=125$)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	5	W
Peak pulse voltage ($T_j=25$; non-repetitive,off-state;FIG.8)	V_{pp}	1.8	kV

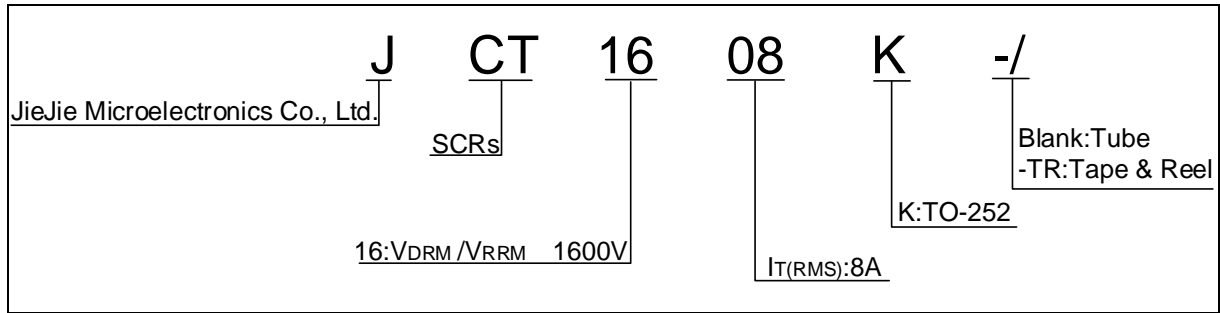
ELECTRICAL CHARACTERISTICS ($T_j=25$ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12V R_L=33$	-	-	15	mA
V_{GT}		-	-	1	V
V_{GD}	$V_D=V_{DRM} T_j=125 R_L=3.3K$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	-	40	mA
I_H	$I_T=500mA$	-	-	30	mA
dV/dt	$V_D=1070V$ Gate Open $T_j=125$	3000	-	-	V/ μs
t_{on}	$I_G=20mA I_A=200mA I_R=20mA$ $T_j=25$	-	3	-	μs
t_{off}		-	40	-	μs

STATIC CHARACTERISTICS

Symbol	Parameter	Value(MAX.)	Unit
V_{TM}	$I_{TM}=16A t_p=380\mu s$	1.6	V
V_{TO}	$T_j=25$		

ORDERING INFORMATION



MARKING

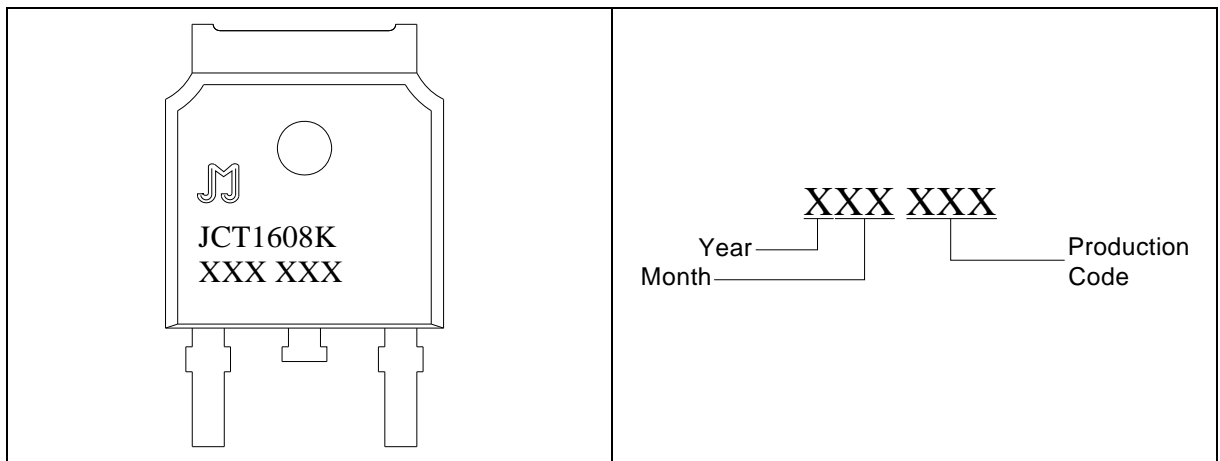


FIG.1 Maximum power dissipation versus RMS on-state current

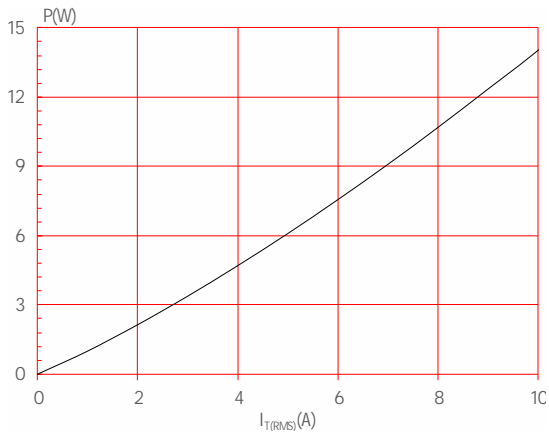


FIG.2: RMS on-state current versus case temperature

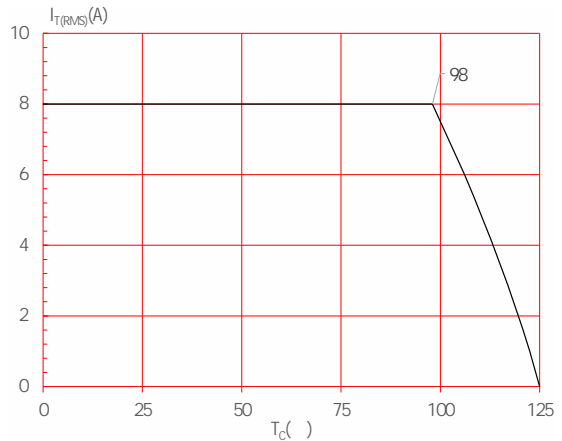


FIG.3: RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35μm)(full cycle)

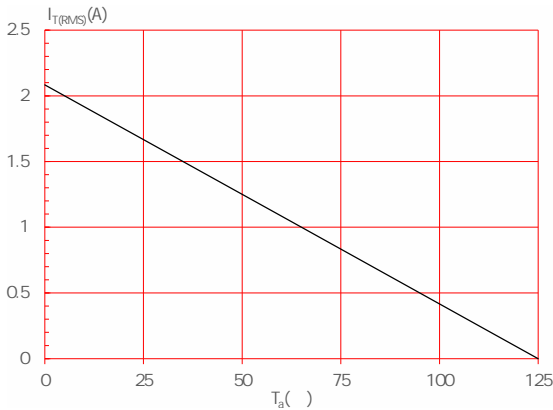


FIG.4: Surge peak on-state current versus number of cycles

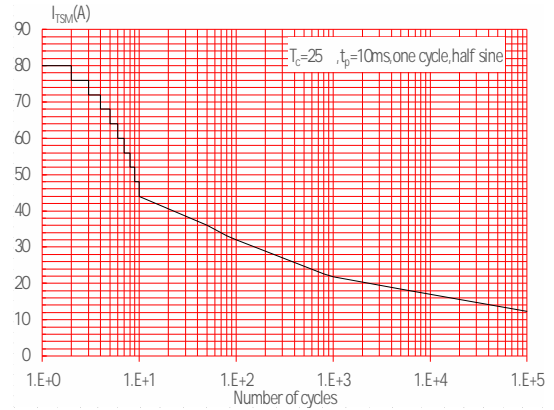


FIG.5: On-state characteristics

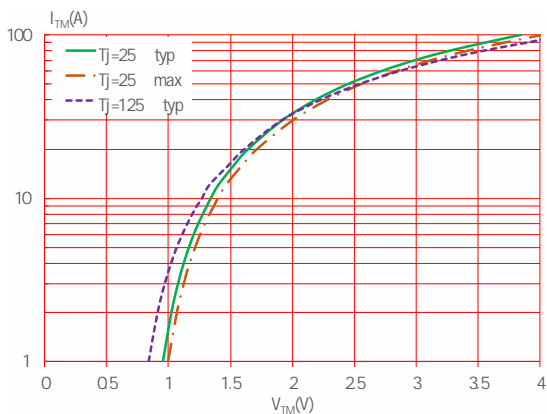


FIG.6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 100\text{A}/\mu\text{s}$)

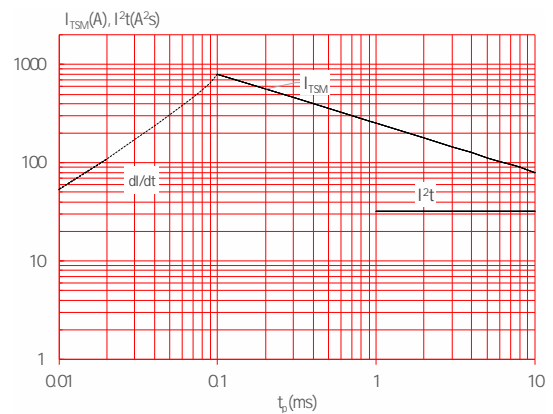


FIG.7: Relative variations of gate trigger current, holding current and latching current versus junction temperature

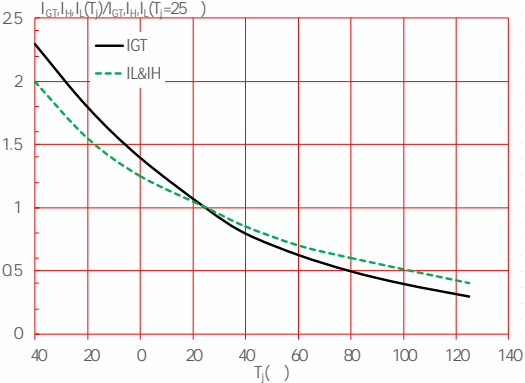
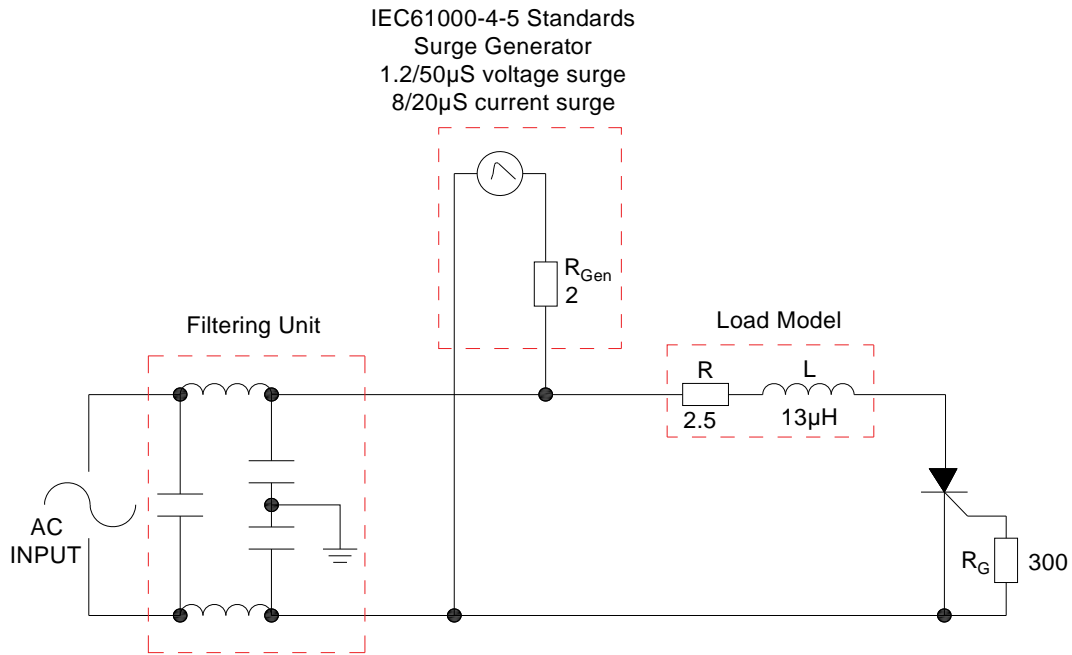
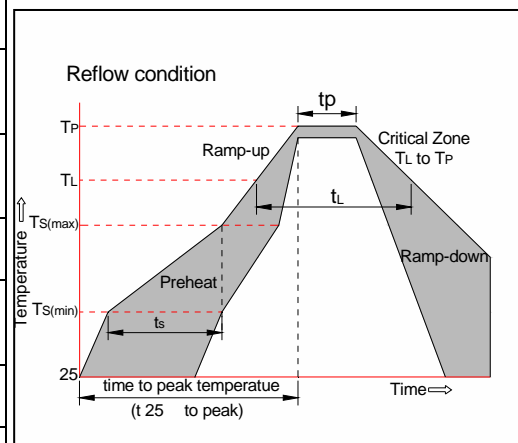


FIG.8 Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150
	-Temperature Max($T_{s(max)}$)	+200
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L) to peak)		3 /sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 /sec. Max
Reflow	-Temperature(T_L) (Liquidus)	+217
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)
Time within 5 of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6 /sec. Max
Time 25 to Peak Temp (T_p)		8 min. Max
Do not exceed		+260



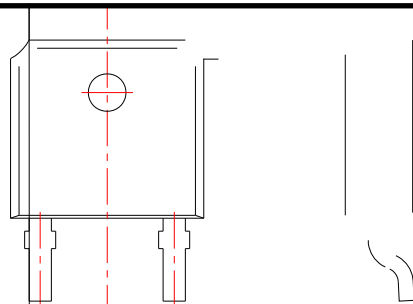
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT1608K	1600	15	TO-252	80	Tube
JCT1608K-TR				2,500	Tape & Reel

Document Revision History

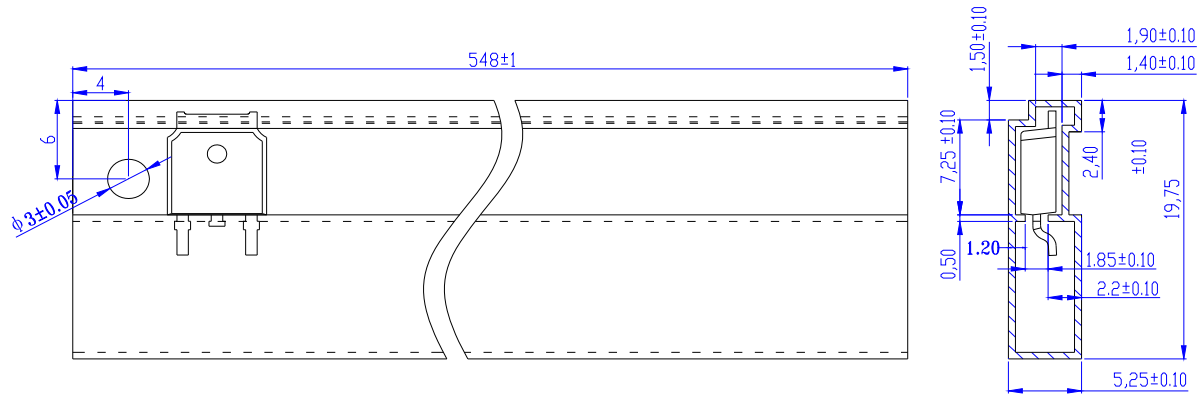
Date	Revision	Changes
Apr.07, 2024	A.1.0	Last update

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1						
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	0.95		1.30	0.037		0.051
L2	1.35		1.75	0.053		0.069
V1		7°			7°	
V2	0°		6°	0°		6°


DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-252	TUBE	80	4,000	20,000

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10			
E		1.75	1.85			
F						
D0						
D1						
P0						
P1						
P2						
10P0						
A0						
B0						
K0						
T						
t1						

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