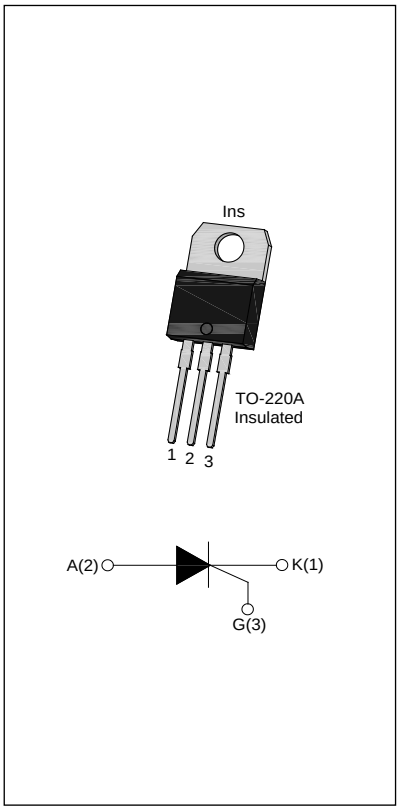
JCT616A-FO 16A SCRs

Rev.1.2

DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT616A-FO of silicon controlled rectifiers provide high dV/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. From all three terminals to external heatsink, JCT616A-FO provides a rated insulation voltage of 2500 V_{RMS},complying with UL standards (File ref: E252906).PackageTO-220A is RoHS compliant. (2011/65/EU)



MAIN FEATURES

Symbol	JCT616A-FO
V_{DRM}/ V_{RRM}	600V
$I_{T(RMS)}$	16A
I_{GT}	3~6mA

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40-150	℃
Operating junction temperature range		T_j	-40-150	℃
Repetitive peak off-state voltage(T_j=150℃)		V_{DRM}	600	V
Repetitive peak reverse voltage(T_j=150℃)		V_{RRM}	600	V
RMS on-state current	TO-220A(Ins) (T_C=100℃)	$I_{T(RMS)}$	16	A
Average on-state current	TO-220A(Ins) (Tc=100℃)	$I_{T(AV)}$	10	A
Non repetitive surge peak on-state current (t_p=10ms)		I_{TSM}	180	A
I^2t value for fusing (t_p=10ms)		I^2t	162	A^2s
Critical rate of rise of on-state current (I_G=2×I_{GT})		dI/dt	100	A/μs
Peak gate current		I_{GM}	4	A

Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	5	W
Peak pulse voltage (T_j=25℃; non-repetitive,off-state;FIG.7)	Vpp	0.7	kV

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	V_D=12V R_L=33Ω	3	-	6	mA
V_{GT}		-	-	1.3	V
V_{GD}	V_D=V_{DRM} T_j=150℃ R_L=3.3kΩ	0.2	-	-	V
I_L	I_G=1.2I_{GT}	-	-	60	mA
I_H	I_T=500mA	-	-	50	mA
dv/dt	V_D=2/3V_{DRM} Gate Open T_j=150℃	300	-	-	V/μs
t_{on}	I_G=20mA I_A=200mA I_R=20mA T_j=25℃	-	-	4	μs
t_{off}		-	-	12	μs

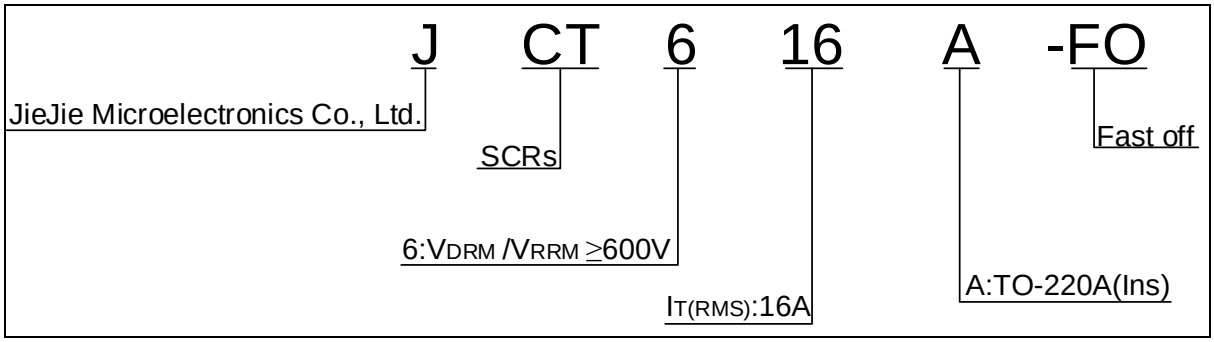
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	I_{TM}=32A t_p=380μs	T_j=25℃	1.5	V
V_{TO}	Threshold voltage	T_j=150℃	0.9	V
Rd	Dynamic resistance	T_j=150℃	18.1	mΩ
I_{DRM}/I_{RRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25℃	5	μA
		T_j=150℃	1	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	2.5	℃/W

ORDERING INFORMATION



MARKING

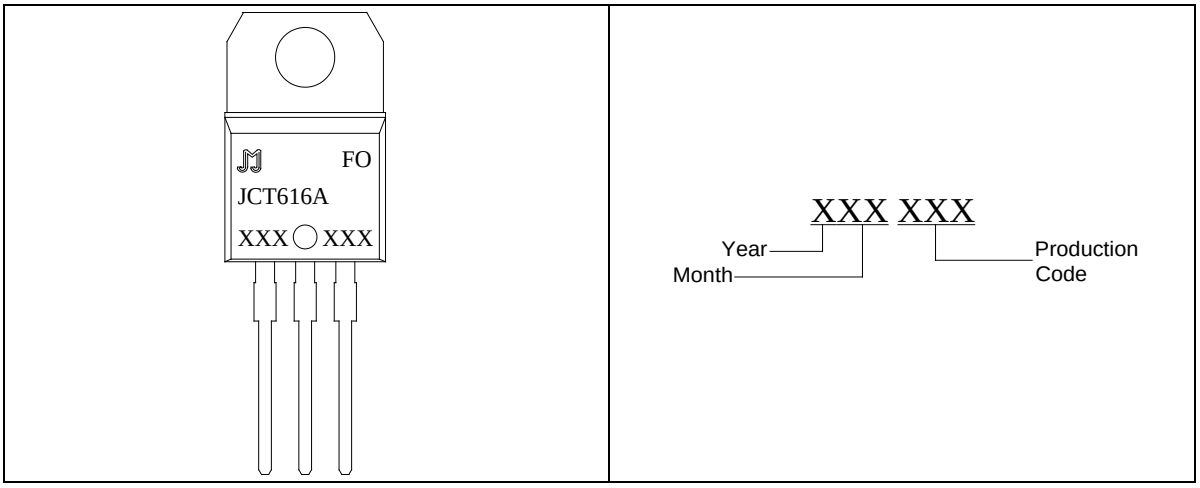


FIG.1 Maximum power dissipation versus RMS on-state current

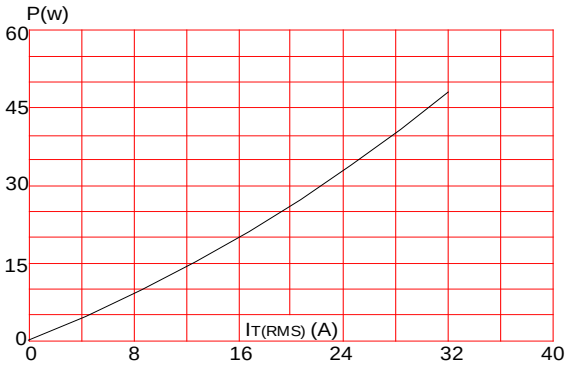


FIG.2: RMS on-state current versus case temperature

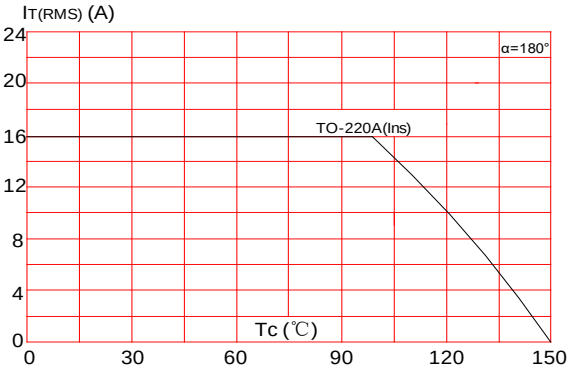


FIG.3: Surge peak on-state current versus number of cycles

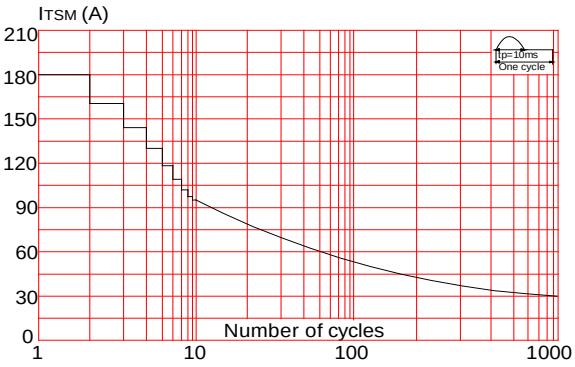


FIG.4: On-state characteristics (maximum values)

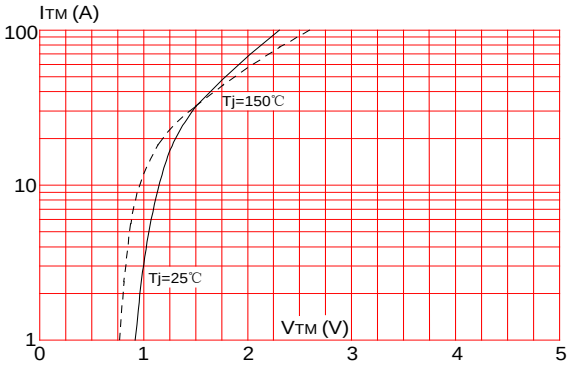


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponging value of I^2t (dI/dt<100A/μs)

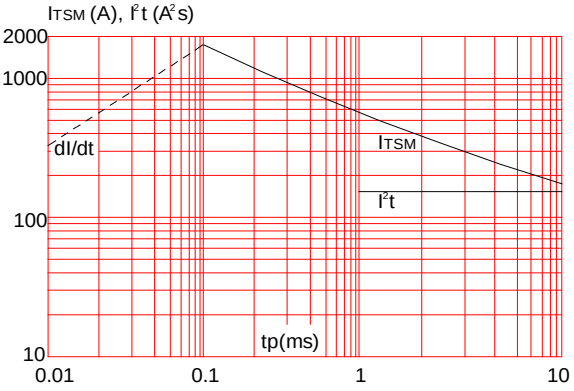


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

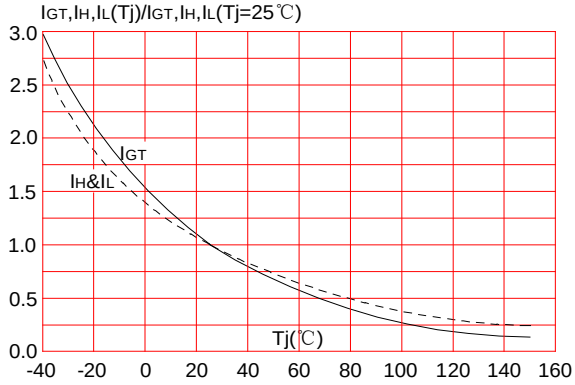
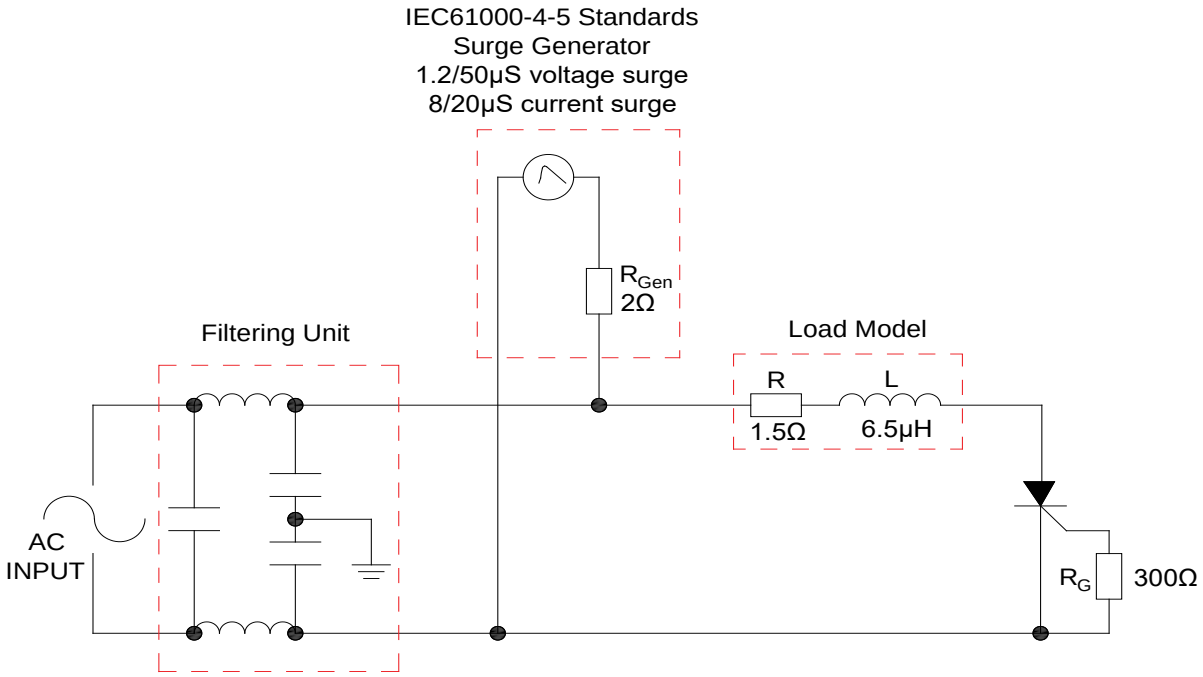


FIG.7：Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



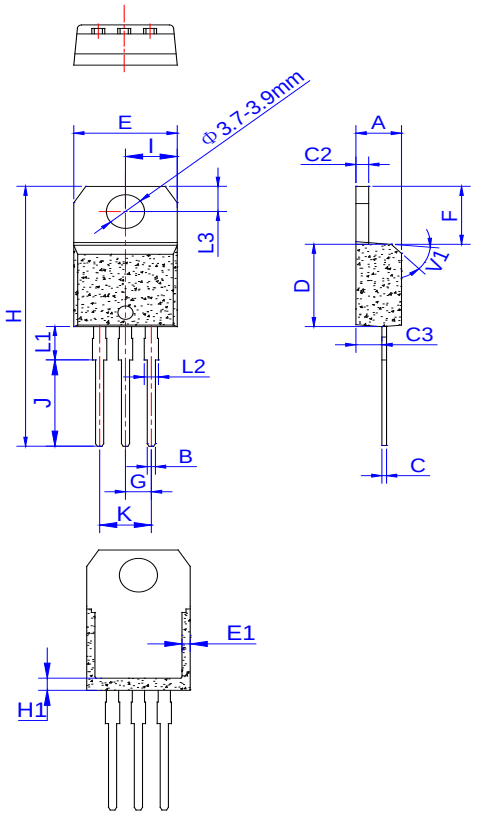
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JCT616A-FO	600	3~6	TO-220A(Ins)	50	Tube

Document Revision History

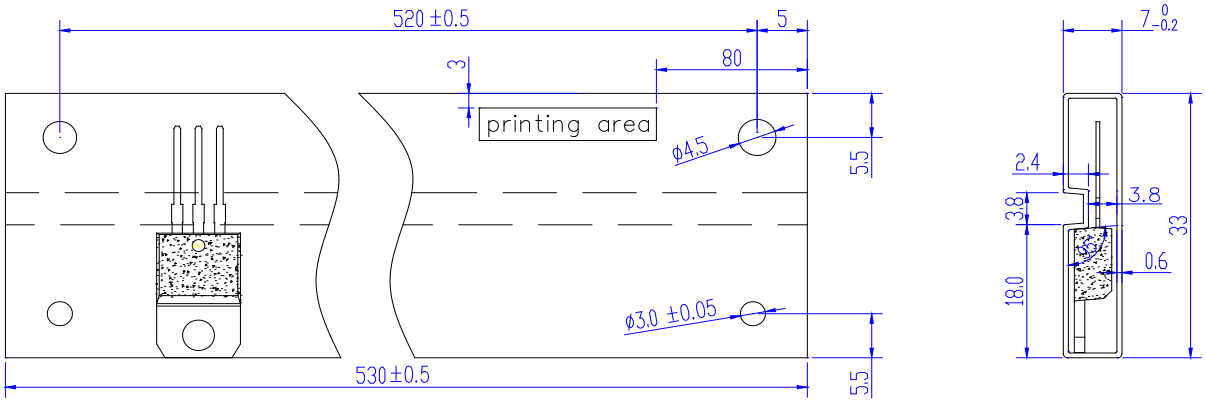
Date	Revision	Changes
Jun.21, 2022	1	Last update
Sept.5, 2022	1.1	Add $I_{T(AV)}$
Oct.10, 2025	1.2	Revise PACKAGE MECHANICAL DATA

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.40	0.386		0.409
E1	1.00		1.40	0.039		0.055
F	6.25		6.85	0.246		0.270
G	2.40		2.70	0.094		0.106
H	28.00		29.80	1.102		1.173
H1	1.80		2.20	0.071		0.087
I	4.80		5.20	0.189		0.205
J	9.55		9.95	0.376		0.392
K	4.80		5.20	0.189		0.205
L1	3.45		4.05	0.136		0.159
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	5,000

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