

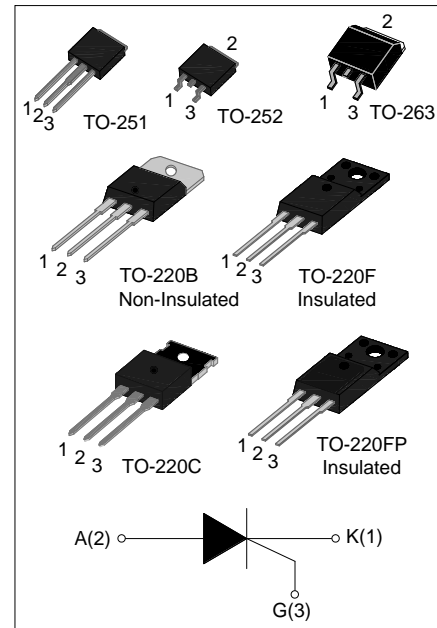


## JCT151 Series 12A SCRs

Rev.5.0

### DESCRIPTION:

JCT151 series of silicon controlled rectifiers, with high ability to withstand the shock loading of large current, 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. JCT151F/JCT151FP provides insulation voltage rated at 2000V RMS from all three terminals to external heatsink complying with UL standards (File ref: E252906).



### MAIN FEATURES

Symbol	JCT151-650R	JCT151-800R
$V_{DRM}/V_{RRM}$	650V	800V
$I_{T(RMS)}$	12A	
$I_{GT}$	$\leq 15mA$	

### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		$T_{stg}$	-40 - 150	$^{\circ}C$
Operating junction temperature range		$T_j$	-40 - 125	$^{\circ}C$
Repetitive peak off-state voltage ( $T_j=25^{\circ}C$ )		$V_{DRM}$	650/800	V
Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )		$V_{RRM}$	650/800	V
RMS on-state current	TO-251/ TO-252 ( $T_C=98^{\circ}C$ )	$I_{T(RMS)}$	12	A
	TO-220B (Non-Ins)/ TO-220C/ TO-263 ( $T_C=100^{\circ}C$ )			
	TO-220F (Ins) / TO-220FP(Ins) ( $T_C=85^{\circ}C$ )			
Non repetitive surge peak on-state current (tp=10ms)		$I_{TSM}$	120	A

I <sup>2</sup> t value for fusing (tp=10ms)	I <sup>2</sup> t	72	A <sup>2</sup> s
Repetitive rate of rise of on-state current (I <sub>G</sub> =2×I <sub>GT</sub> )	dI <sub>T</sub> /dt	50	A/μs
Peak gate current	I <sub>GM</sub>	2	A
Peak gate power	P <sub>GM</sub>	5	W
Average gate power dissipation	P <sub>G(AV)</sub>	0.5	W

**ELECTRICAL CHARACTERISTICS** (T<sub>j</sub>=25°C unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I <sub>GT</sub>	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	-	4	15	mA
V <sub>GT</sub>		-	0.75	1.5	V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> T <sub>j</sub> =125°C R <sub>L</sub> =3.3KΩ	0.2	-	-	V
I <sub>L</sub>	I <sub>G</sub> =1.2I <sub>GT</sub>	-	12	40	mA
I <sub>H</sub>	I <sub>T</sub> =500mA	-	12	30	mA
dV/dt	V <sub>D</sub> =2/3V <sub>DRM</sub> Gate Open T <sub>j</sub> =125°C	200	400	-	V/μs

**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
V <sub>TM</sub>	I <sub>TM</sub> =23A tp=380μs	T <sub>j</sub> =25°C	1.7	V
I <sub>DRM</sub>	V <sub>D</sub> =V <sub>DRM</sub> V <sub>R</sub> =V <sub>RDM</sub>	T <sub>j</sub> =25°C	10	μA
I <sub>RDM</sub>		T <sub>j</sub> =125°C	1	mA

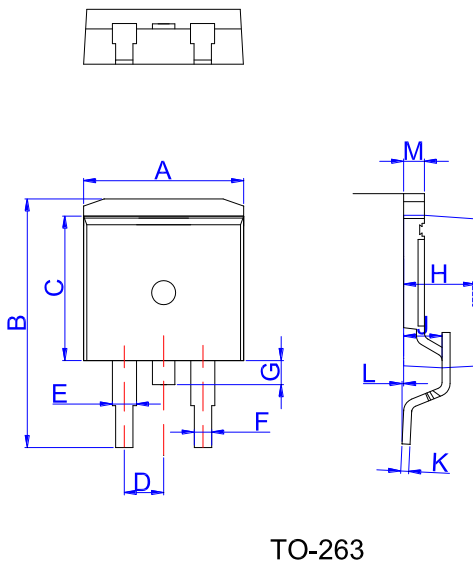
**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
R <sub>th(j-mb)</sub>	Junction to mounting base	TO-251/ TO-252	2.0	°C/W
		TO-220B (Non-Ins)/ TO-220C	1.7	
		TO-220F (Ins)/ TO-220FP (Ins)	4.5	
		TO-263	1.5	

**ORDERING INFORMATION**

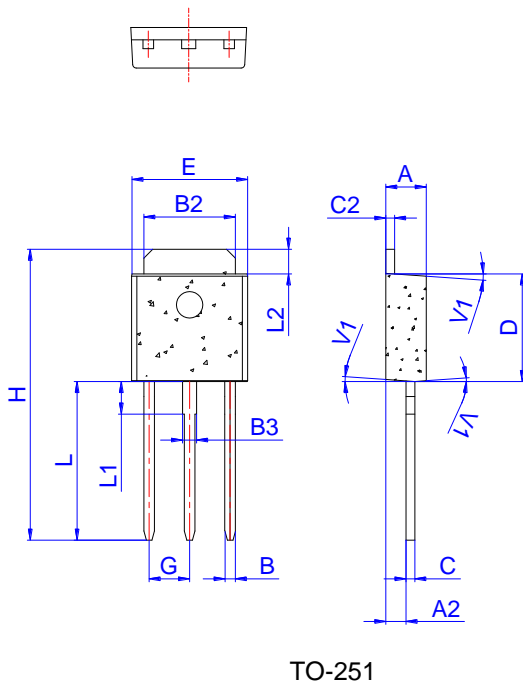
JieJie Microelectronics Co.,Ltd	J	CT	151	B	-650R
	SCRs		IT(RMS):12A	650R: $V_{DRM} / V_{RRM} \geq 650V$ 800R: $V_{DRM} / V_{RRM} \geq 800V$	
H:TO-251 K:TO-252 E:TO-263 F:TO-220F(Ins) FP:TO-220FP(Ins) B:TO-220B(Non-Ins) C:TO-220C					

**PACKAGE MECHANICAL DATA**

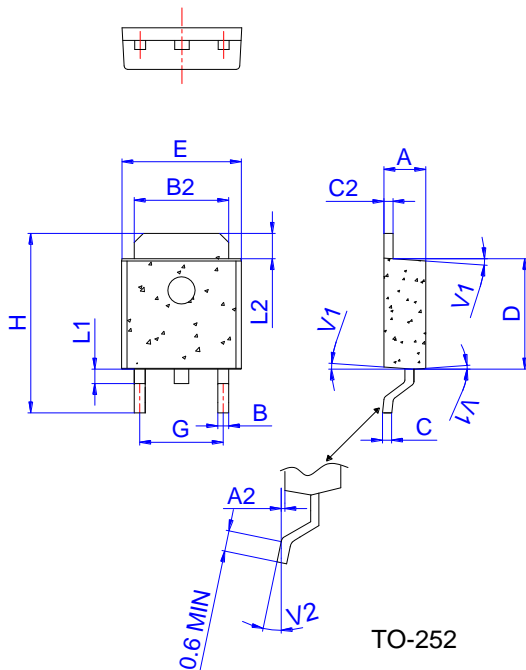


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
J	2.30		2.70	0.091		0.106
K	0.38		0.55	0.015		0.022
L	0	0.10	0.25	0	0.004	0.010
M	1.25		1.35	0.049		0.053

PACKAGE MECHANICAL DATA

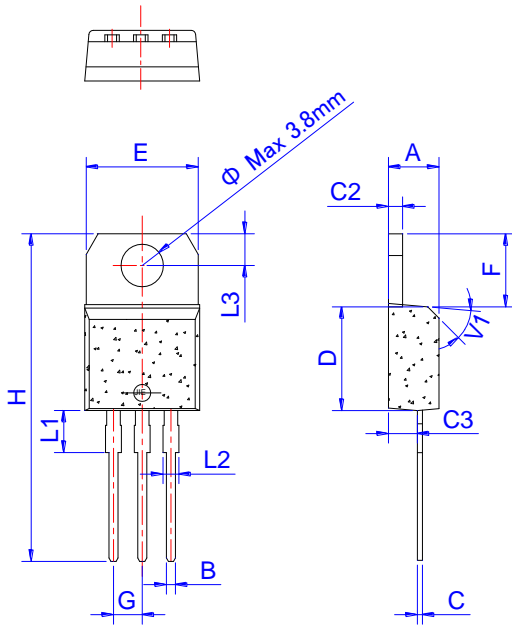


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	

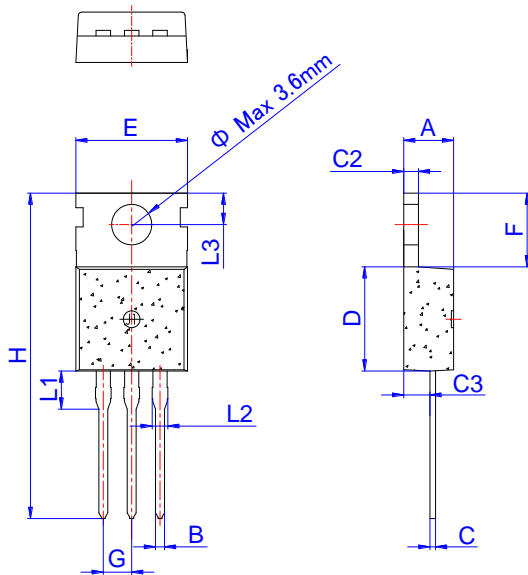


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°

PACKAGE MECHANICAL DATA

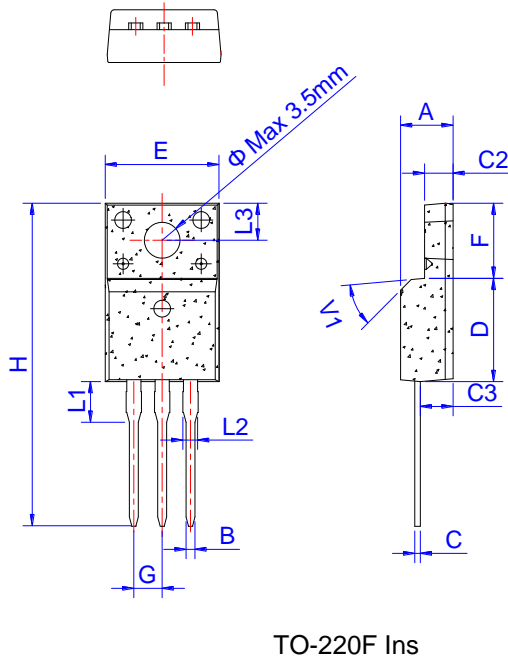


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

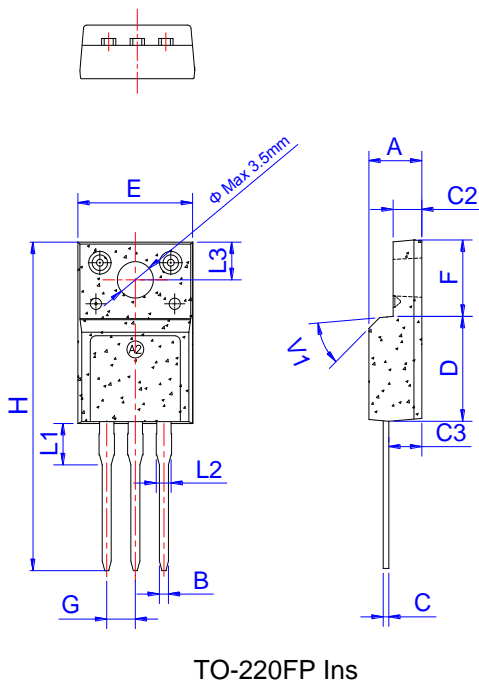


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

PACKAGE MECHANICAL DATA

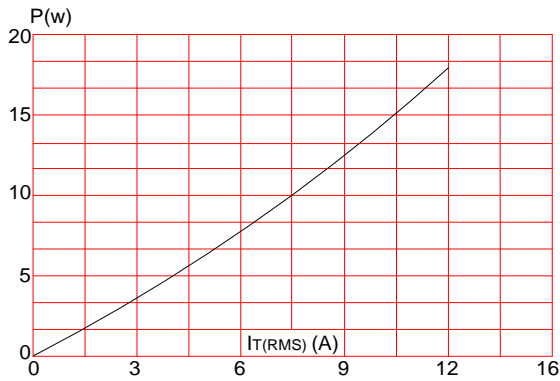


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.80	0.173		0.189
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.48		0.75	0.019		0.030
C2	2.40		2.70	0.094		0.106
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.70		10.3	0.382		0.406
F	6.40		7.00	0.252		0.276
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

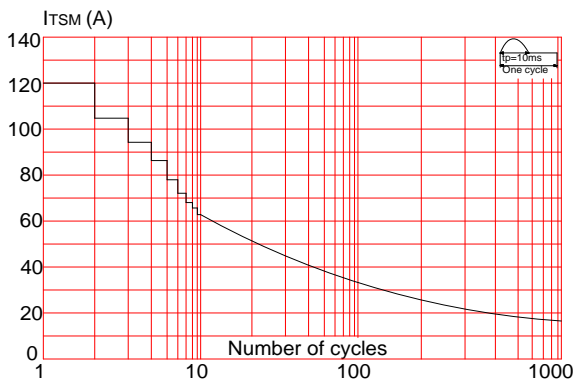


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

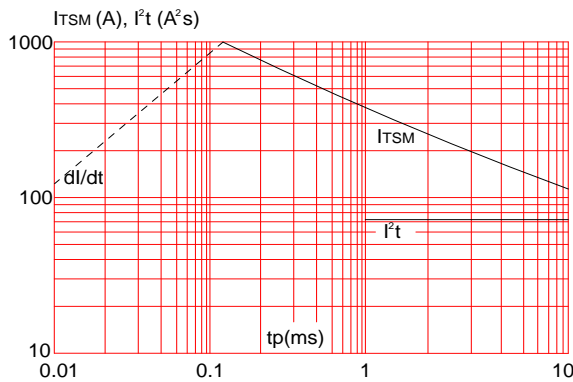
**FIG.1:** Maximum power dissipation versus RMS on-state current



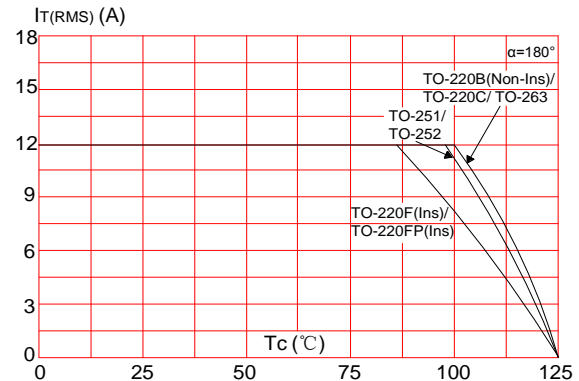
**FIG.3:** Surge peak on-state current versus number of cycles



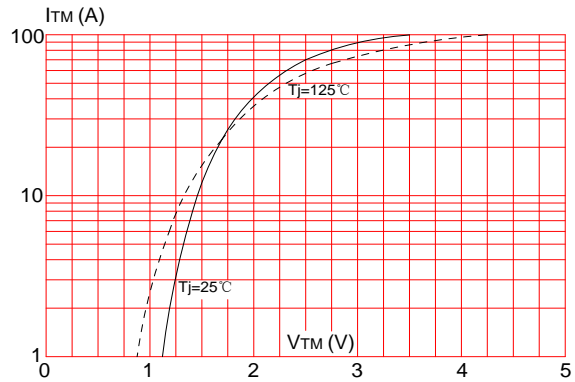
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )



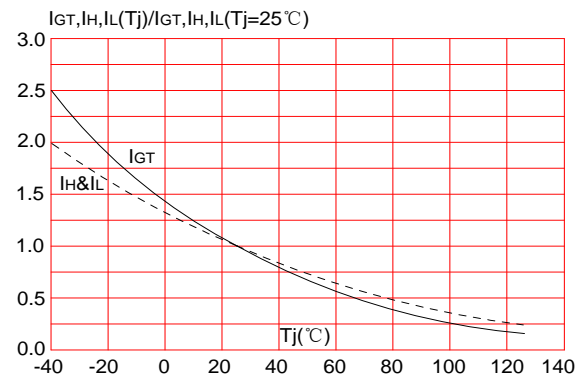
**FIG.2:** RMS on-state current versus case temperature



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



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



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