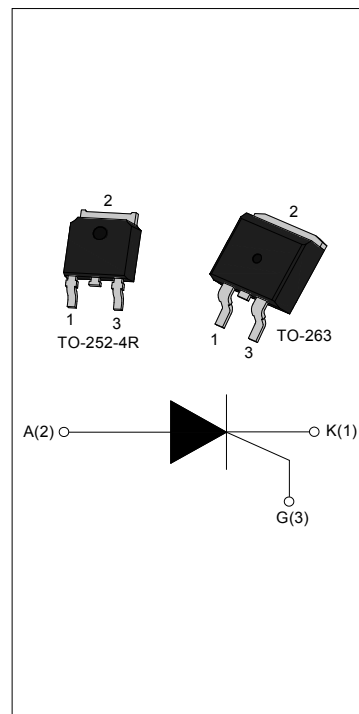




DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT151 series 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. Package TO-252-4R and TO-263 are RoHS compliant. (2011/65/EU)



MAIN FEATURES

Symbol	Value	Symbol
V_{DRM}/V_{RRM}	650/800	V
$I_{T(RMS)}$	12	A
I_{GT}	≤15	mA

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40 - 150	°C
Operating junction temperature range		T_j	-40 - 150	°C
Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$)		V_{DRM}	650/800	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)		V_{RRM}	650/800	V
RMS on-state current	TO-252-4R ($T_c=115^\circ\text{C}$)	$I_{T(RMS)}$	12	A
	TO-263 ($T_c=100^\circ\text{C}$)			
Non repetitive surge peak on-state current ($F=50\text{Hz}$ $t_p=10\text{ms}$)		I_{TSM}	120	A
Non repetitive surge peak on-state current ($F=60\text{Hz}$ $t_p=8.3\text{ms}$)		I_{TSM}	132	A
I^2t value for fusing ($t_p=10\text{ms}$)		I^2t	72	A^2s
Repetitive rate of rise of on-state current ($I_G=2 \times I_{GT}$)		di_T/dt	50	$\text{A}/\mu\text{s}$
Peak gate current		I_{GM}	2	A

Peak gate power	P_{GM}	5	W
Average gate power dissipation	$P_{G(AV)}$	0.5	W

ELECTRICAL CHARACTERISTICS ($T_j=25^{\circ}C$ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12V R_L=33\Omega$	-	4	15	mA
V_{GT}		-	0.75	1.5	V
V_{GD}	$V_D=V_{DRM} T_j=150^{\circ}C R_L=3.3K\Omega$	0.2	-	-	V
I_L	$I_G=1.2I_{GT}$	-	12	40	mA
I_H	$I_T=500mA$	-	12	30	mA
dV/dt	$V_D=540V$ Gate Open $T_j=150^{\circ}C$	50	-	-	V/ μs
dV/dt	$V_D=436V$ Gate Open $T_j=150^{\circ}C$	80	-	-	V/ μs
t_{on}	$I_{GT}=20mA I_A=100mA I_R=10mA$ $T_j=25^{\circ}C$	-	2	-	μs
t_{off}		-	30	-	μs
R_d	Dynamic resistance $T_j=125^{\circ}C$	-	-	35	m Ω

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM}=23A t_p=380\mu s$	$T_j=25^{\circ}C$	1.6	V
I_{DRM}	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}C$	10	μA
I_{RRM}		$T_j=150^{\circ}C$	1	mA

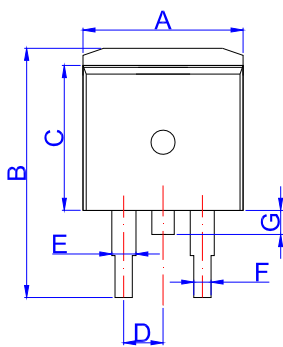
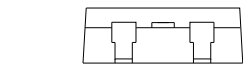
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	TO-252-4R	1.3	$^{\circ}C/W$
		TO-263	2.0	
$R_{th(j-a)}$	Junction to ambient	TO-252-4R	70	
		TO-263	45	

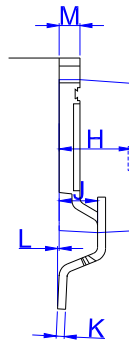
ORDERING INFORMATION

JieJie Microelectronics Co.,Ltd	J	CT	151	K	-650R
		SCRs			650R: $V_{DRM} / V_{RRM} \geq 650V$ 800R: $V_{DRM} / V_{RRM} \geq 800V$
			$I_{T(RMS)}: 12A$	E:TO-263 K:TO-252-4R ETR:TO-263(Tape&Reel) KTR:TO-252-4R(Tape&Reel)	

PACKAGE MECHANICAL DATA

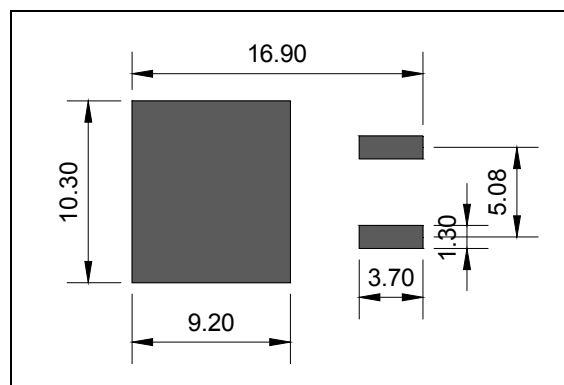


TO-263

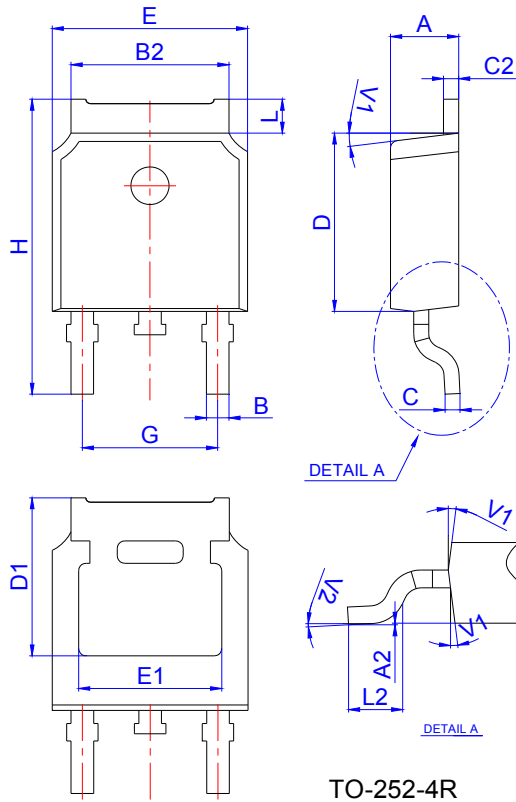


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
J	2.30		2.70	0.091		0.106
K	0.38		0.55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

FOOTPRINT-TO-263 (dimensions in mm)

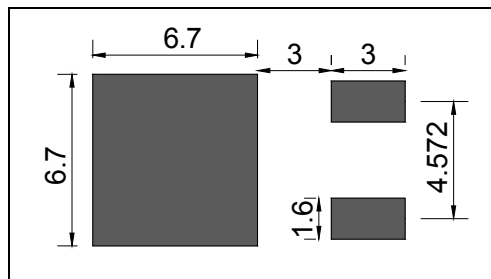


PACKAGE MECHANICAL DATA

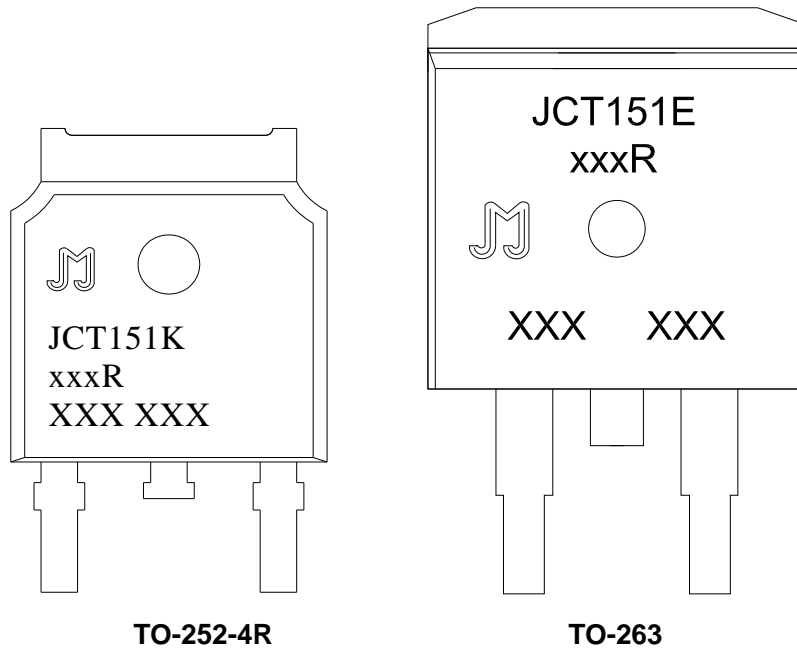


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

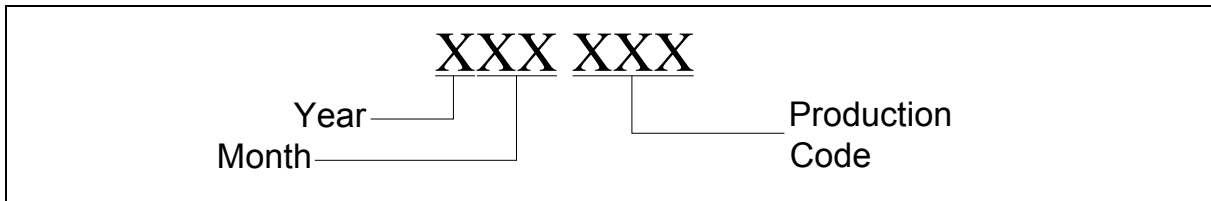
FOOTPRINT-TO-252-4R (dimensions in mm)



MARKING



NOTE: xxxR---650R/800R



PACKAGE INFORMATION

PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-263	TUBE	50	1,000	6,000
TO-252-4R	TUBE	80	4,000	32,000
PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
TO-263	TAPING	800	4,000	13 inch
TO-252-4R	TAPING	2,500	25,000	13 inch

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

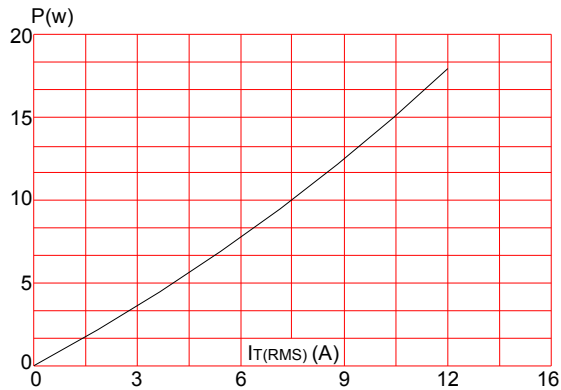


FIG.3: Surge peak on-state current versus number of cycles

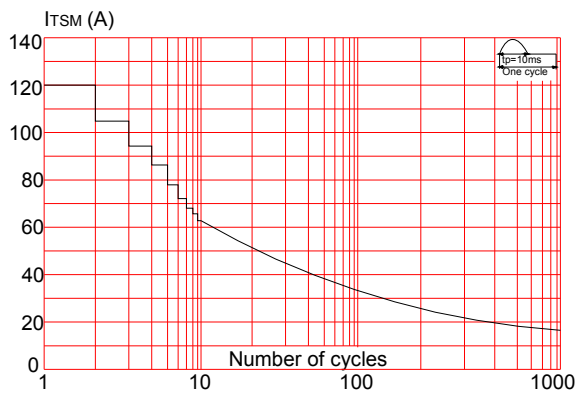


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

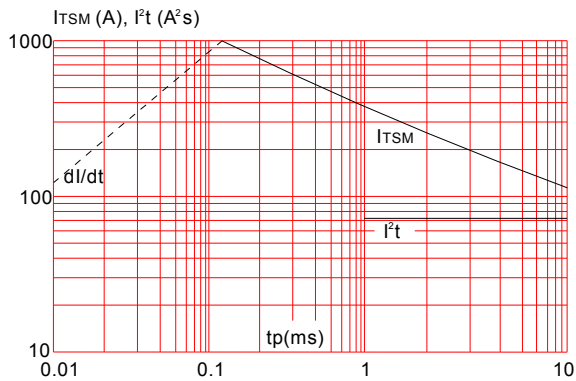


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: $35\mu\text{m}$) (full cycle)

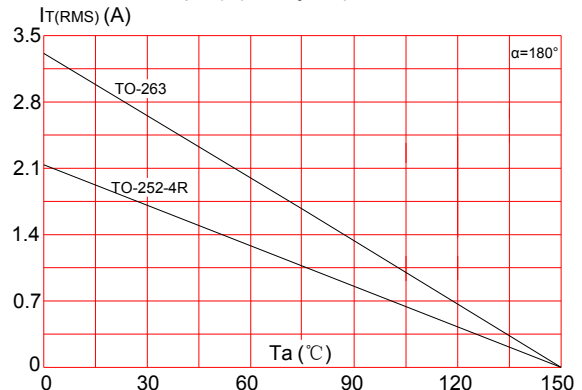


FIG.4: On-state characteristics (maximum values)

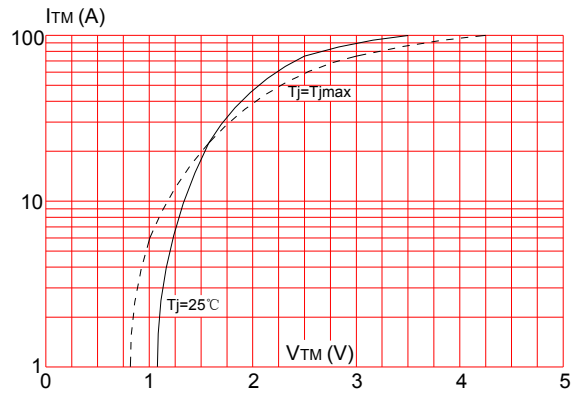
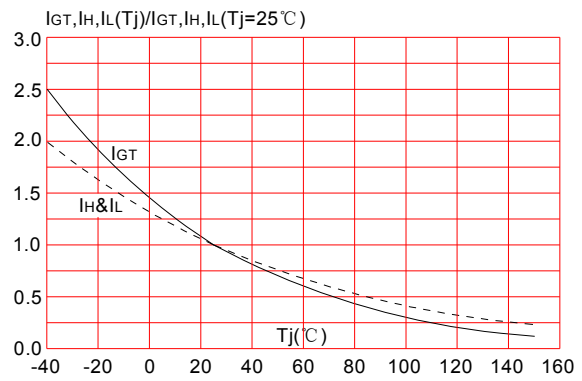
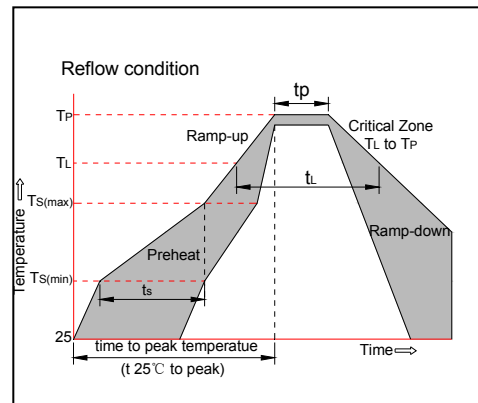


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature




SOLDERING PARAMETERS

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



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