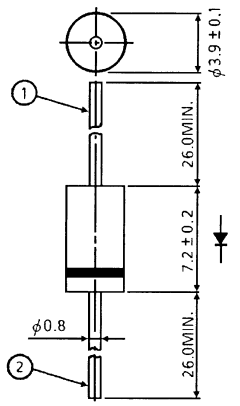
TOSHIBA RECTIFIER SILICON DIFFUSED TYPE

1R5JU41

Unit: mm

HIGH SPEED RECTIFIER APPLICATIONS (FAST RECOVERY)

- Average Forward Current : $I_{F\ (AV)}$ = 1.5A
- Repetitive Peak Reverse Voltage : V_{RRM} = 600V
- Reverse Recovery Time : t_{rr} = 100ns (Max)
- Plastic Mold Type



1. ANODE
2. CATHODE

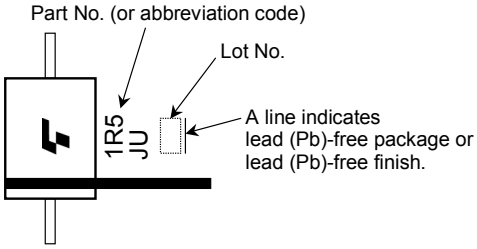
JEDEC	—
JEITA	—
TOSHIBA	3−4B1A

Weight: 0.47g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Reverse Voltage	V_{RRM}	600	V
Average Forward Current	$I_{F\ (AV)}$	1.5	A
Peak One Cycle Surge Forward Current (Non−Repetitive)	I_{FSM}	40 ($50H_Z$)	A
		44 ($60H_Z$)	
Junction Temperature Range	T_j	−40~150	°C
Storage Temperature Range	T_{stg}	−40~150	°C

MARKING

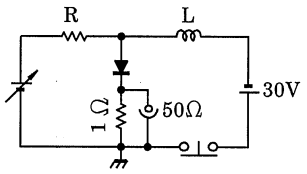


Abbreviation Code	Part No.
1R5JU	1R5JU41

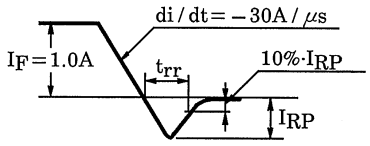
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Peak Forward Voltage		V_{FM}	V_{FM} = 2.0A	—	—	2.0	V
Repetitive Peak Reverse Current		I_{RRM}	V_{RRM} = 600V	—	—	100	μA
Reverse Recovery Time	(Note 1)	t_{rr}	I_F = 1A, di / dt = −30A / μs	—	—	100	ns
Forward Recovery Time	(Note 2)	t_{fr}	I_F = 1.0A	—	—	250	ns
Thermal Resistance	(Note 3)	$R_{th\ (j-a)}$	Junction to Ambient	—	—	86	°C / W
Thermal Resistance	(Note 3)	$R_{th\ (j-\ell)}$	Junction to Lead	—	—	23	°C / W

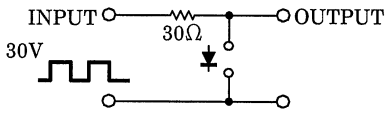
Note 1: t_{rr} TEST CIRCUIT



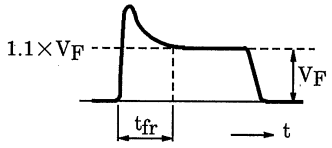
WAVEFORM



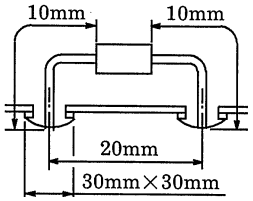
Note 2: t_{fr} TEST CIRCUIT



WAVEFORM



Note 3: THERMAL RESISTANCE



Handling Precaution

The maximum ratings denote the absolute maximum ratings, which are rated values and must not be exceeded during operation, even for an instant. The following are the general derating methods that we recommend when you design a circuit with a device.

V_{RRM}: We recommend that the worst case voltage, including surge voltage, be no greater than 80% of the maximum rating of V_{RRM} for a DC circuit and be no greater than 50% of that of V_{RRM} for an AC circuit. V_{RRM} has a temperature coefficient of 0.1%/°C. Take this temperature coefficient into account designing a device at low temperature.

$I_{F(AV)}$: We recommend that the worst case current be no greater than 80% of the maximum rating of $I_{F(AV)}$. Carry out adequate heat design. If you can't design a circuit with excellent heat radiation, set the margin by using an allowable Tamax-$I_{F(AV)}$ curve.

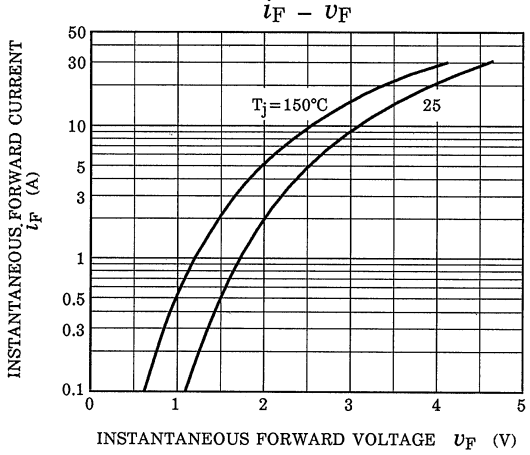
This rating specifies the non-repetitive peak current in one cycle of a 50-Hz sine wave, condition angle 180. Therefore, this is only applied for an abnormal operation, which seldom occurs during the lifespan of the device.

We recommend that a device be used at a Tj of below 120°C under the worst load and heat radiation conditions.

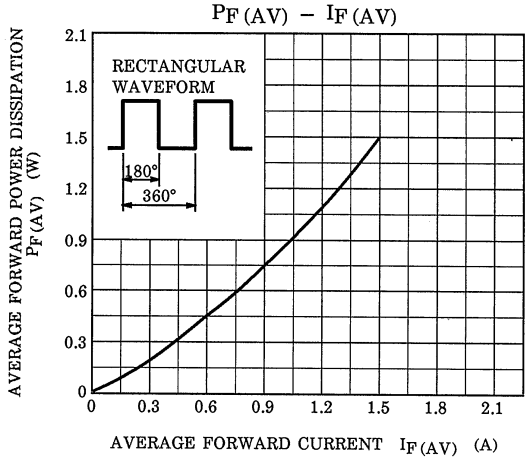
Thermal resistance between junction and ambient fluctuates depending on the device's mounting condition. When using a device, design a circuit board and a soldering land size to match the appropriate thermal resistance value.

Please refer to the Rectifiers databook for further information.

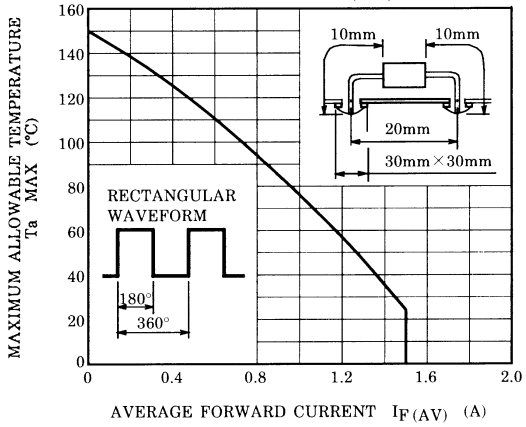
$i_F - v_F$



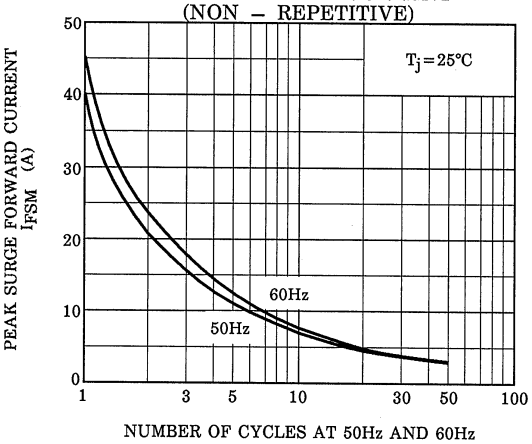
$P_{F(AV)} - I_{F(AV)}$



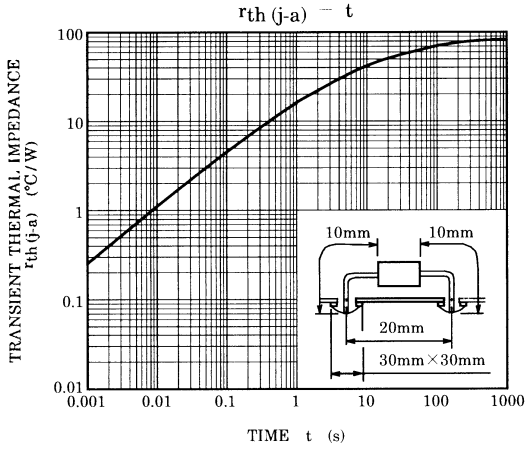
Ta MAX – $I_{F(AV)}$



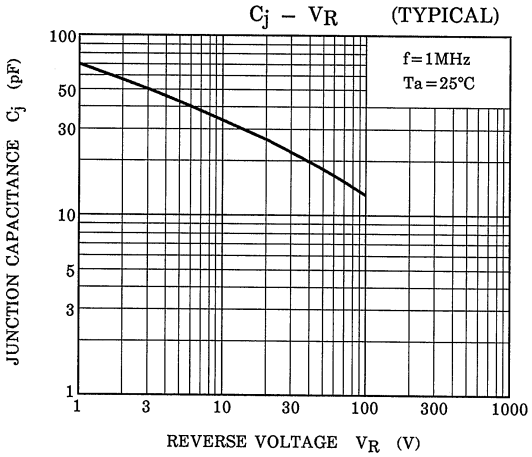
SURGE FORWARD CURRENT (NON – REPETITIVE)



$r_{th\,(j\text{-}a)} - t$



$C_j - V_R$ (TYPICAL)



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