

10Amp. Schottky Barrier Rectifiers

MBR10100AJ3

$I_{F(AV)}$	10A
V_{RRM}	100V
T_j	175°C
V_F	0.67V

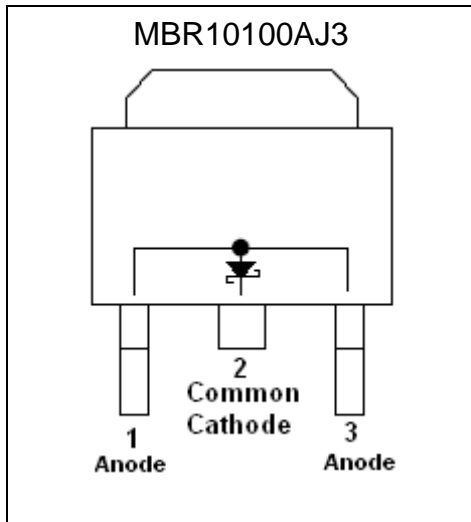
Features

- Low V_F and low IR type
- High junction temperature capability
- High current capability
- High surge capability
- Good tradeoff between leakage current and forward voltage drop
- Low power loss, high efficiency
- RoHS compliant package
- Pb-free lead plating

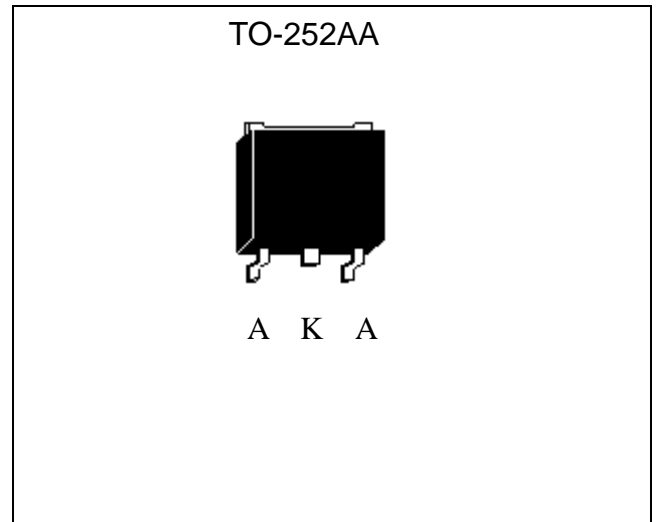
Mechanical Data

- Case: TO-252 molded plastic
- Mounting Position: Any
- Terminals: Pure tin plated, lead-free, solderable per MIL-STD-750 method 2026
- Lead temperature for soldering purpose : 260°C max. for 10 seconds
- Epoxy: UL 94V-0 rate flame retardant
- Weight: 0.34 grams approximately

Equivalent Circuit

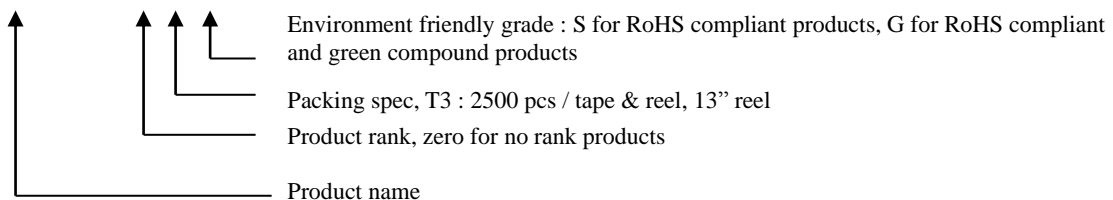


Outline



Ordering Information

Device	Package	Shipping
MBR10100AJ3-0-T3-G	TO-252 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel



**Maximum Ratings and Electrical Characteristics (Per Leg)**

(Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.)

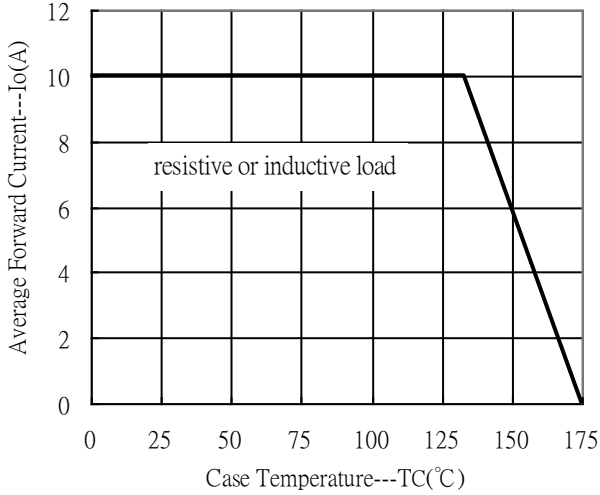
Parameter	Symbol	Min.	Typ.	Max.	Units
Maximum Recurrent peak reverse voltage	V_{RRM}			100	V
Maximum RMS voltage	V_{RMS}			70	V
Maximum DC blocking voltage	V_{DC}			100	V
Maximum instantaneous forward voltage at (Note 1)	V_F		0.67	0.86	V
				$I_F=10A, T_C=25^\circ C$	
				$I_F=10A, T_C=125^\circ C$	
				$I_F=20A, T_C=25^\circ C$	
$I_F=20A, T_C=125^\circ C$				0.85	
Maximum Average forward rectified current @ $T_C=145^\circ C$	$I_{F(AV)}$			10	A
Peak repetitive forward current (Rated V_R , square wave, 20kHz) @ $T_C=135^\circ C$	I_{FRM}			20	A
Peak forward surge current @8.3ms single half sine wave superimposed on rated load (JEDEC method)	I_{FSM}			150	A
Peak repetitive reverse surge current (Note 1), $T_J<175^\circ C$	I_{RRM}			3.0	A
Maximum instantaneous reverse current at	I_R			5.0	μA
				$V_R=100V, T_C=125^\circ C$	1.0
Voltage rate of change, (rated V_R)	dV/dt			10,000	V/ μs
Typical junction capacitance @ $f=1MHz$ and applied 4V reverse voltage	C_J		260		pF
ESD susceptibility (Note 2)				8000	V
Storage temperature range	T_{stg}	-55		+175	$^\circ C$
Operating junction temperature range	T_J	-65		+175	$^\circ C$

Notes : 1. 2.0 μs pulse width, $f=1.0kHz$ 2. Human body model, 1.5k Ω in series with 100pF**Thermal Data**

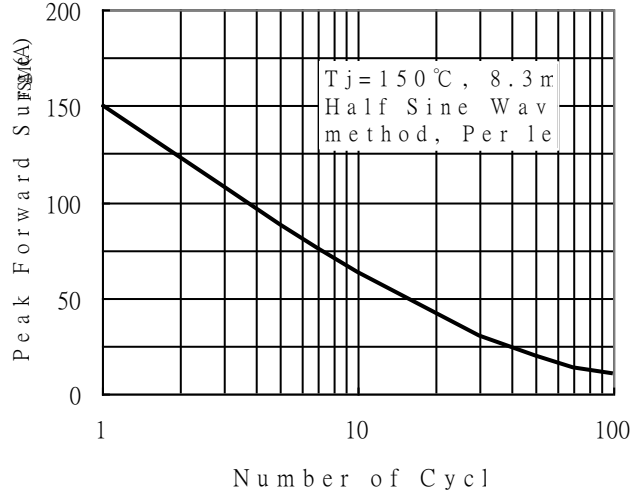
Parameter	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-case, per diode	$R_{th,j-c}$	3.5	$^\circ C/W$
Maximum Thermal Resistance, Junction-to-ambient	$R_{th,j-a}$	90	$^\circ C/W$

Characteristic Curves

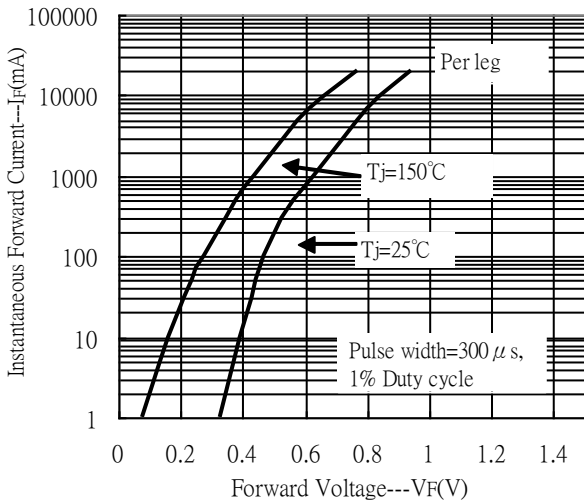
Forward Current Derating Curve



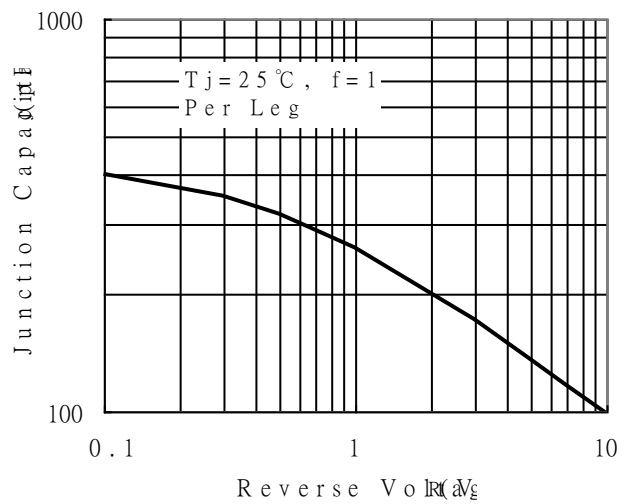
Maximum Non-Repetitive Forward Current



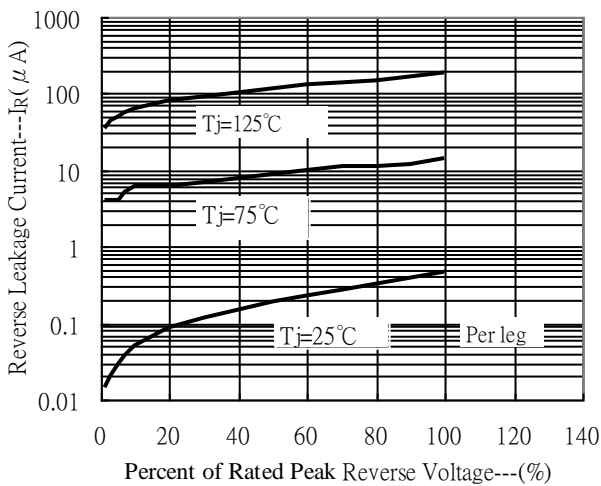
Forward Current vs Forward Voltage



Junction Capacitance vs Reverse Voltage



Reverse Leakage Current vs Reverse Voltage

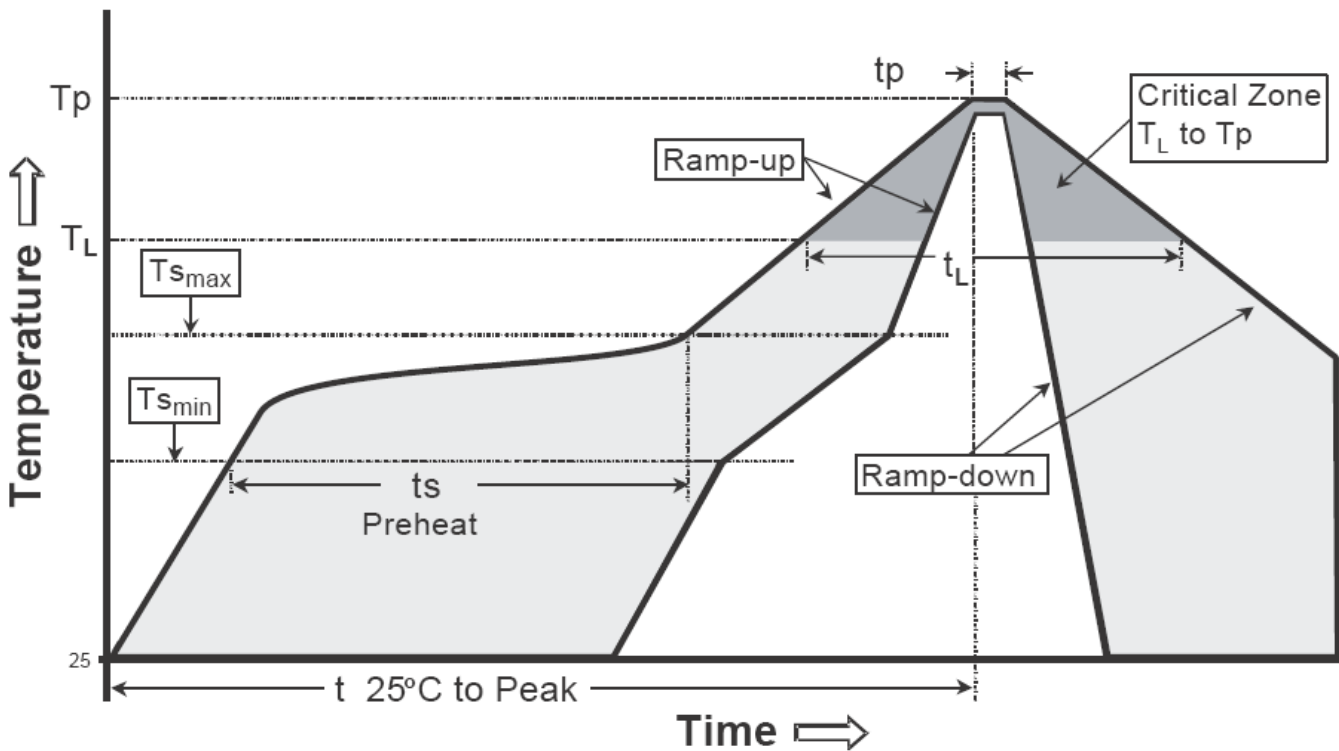


Recommended wave soldering condition

Recommended wave soldering condition

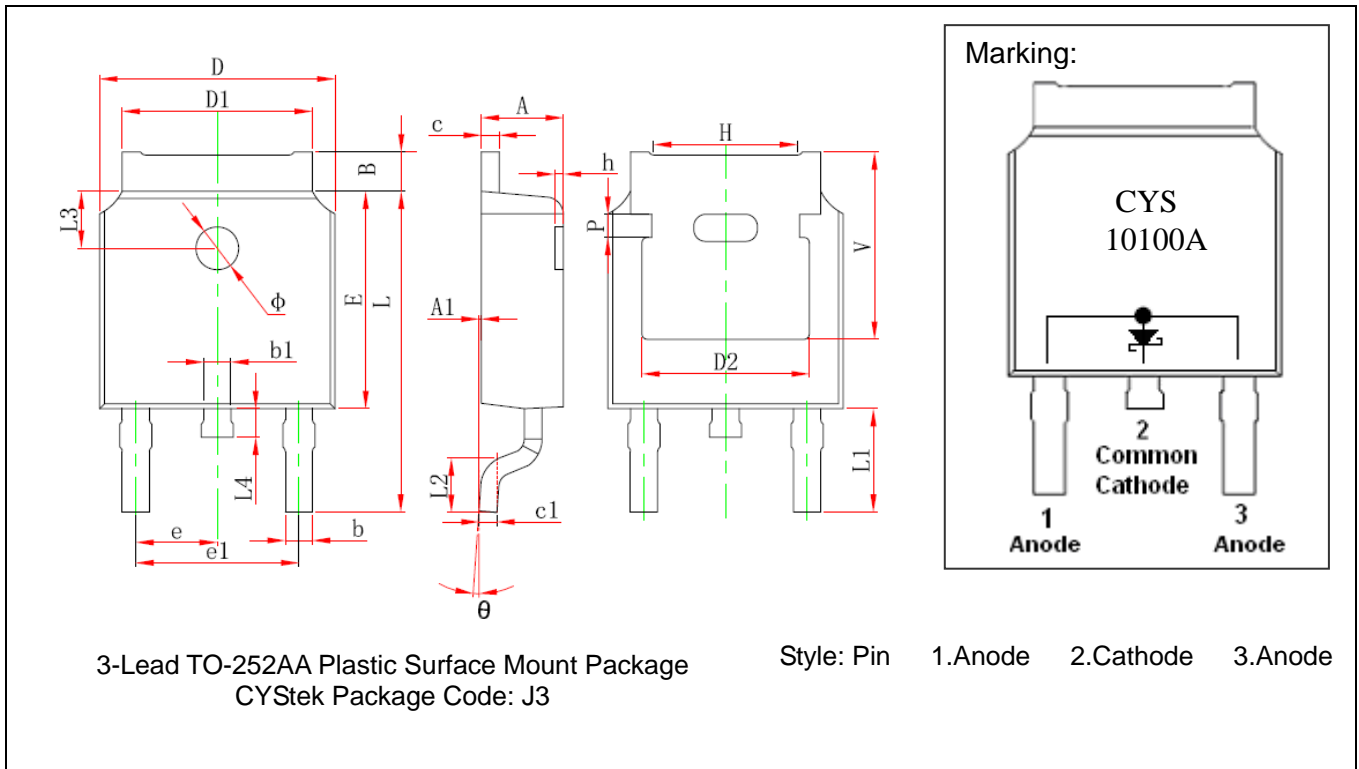
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	60-150 seconds
Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

TO-252AA Dimension



3-Lead TO-252AA Plastic Surface Mount Package
 CYStek Package Code: J3

Style: Pin 1.Anode 2.Cathode 3.Anode

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	e1	0.172	0.188	4.372	4.772
A1	0.000	0.005	0.000	0.127	L	0.386	0.409	9.800	10.400
B	0.037	0.049	0.950	1.250	L1	0.114	REF	2.900	REF
b	0.026	0.034	0.660	0.860	L2	0.055	0.067	1.400	1.700
b1	0.026	0.034	0.660	0.860	L3	0.063	REF	1.600	REF
c	0.018	0.023	0.460	0.580	L4	0.024	0.039	0.600	1.000
c1	0.018	0.023	0.460	0.580	Φ	0.043	0.051	1.100	1.300
D	0.256	0.264	6.500	6.700	θ	0°	8°	0°	8°
D1	0.201	0.215	5.100	5.460	H	0.161	REF	4.100	REF
D2	0.190	REF	4.830	REF	h	0.000	0.012	0.000	0.300
E	0.236	0.244	6.000	6.200	P	0.030	REF	0.760	REF
e	0.086	0.094	2.186	2.386	V	0.211	REF	5.350	REF

Notes: 1.Controlling dimension: millimeters.
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead : Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.