



10Amp. Schottky Barrier Rectifiers

MBR10100E3

$I_{F(AV)}$	$2 \times 5A$
V_{RRM}	100V
T_j	175°C
$V_F(\text{typ.})$	0.66V

Features

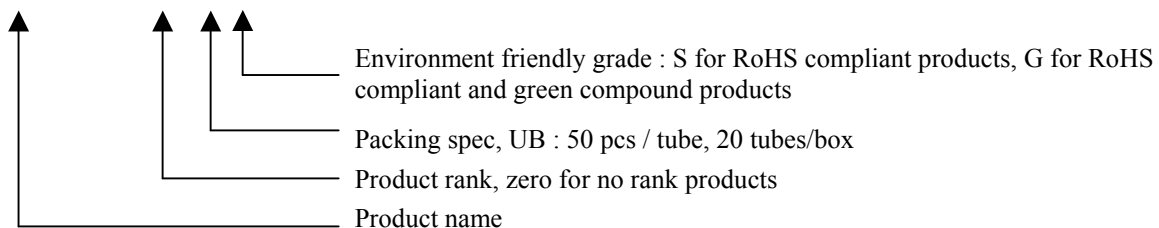
- 175°C operating junction temperature
- Low V_F and low I_r type
- Metal silicon junction, major carrier conduction
- 10A total (5A per diode leg)
- Guardring for stress protection
- Low power loss, high efficiency
- High surge capability
- High temperature soldering guaranteed : 260°C/10s, 0.25”(6.35mm) from case
- For use in low voltage, high frequency inverters, free wheeling, and polarity protection application
- RoHS compliant package

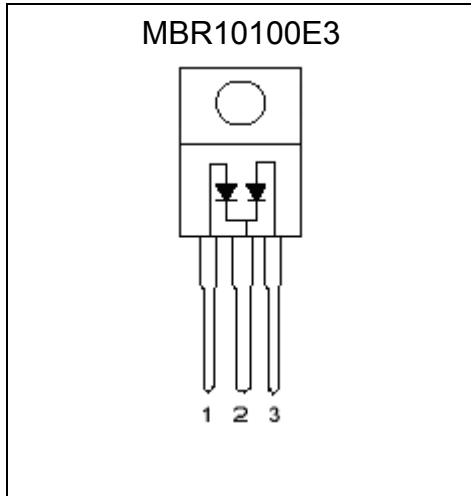
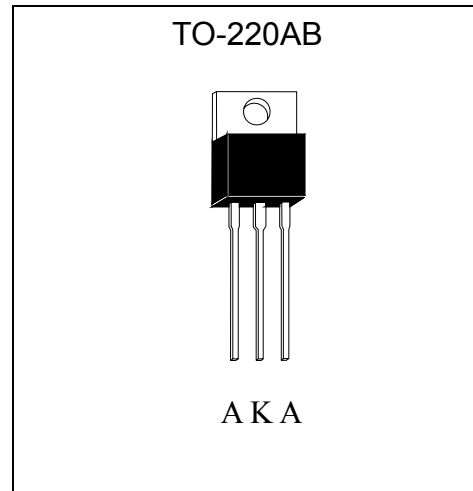
Mechanical Data

- Case: JEDEC TO-220AB molded plastic
- Mounting Position: Any
- Weight: 0.08 ounce, 2.24 grams
- Terminals: Pure tin plated, lead-free, solderable per MIL-STD-750 method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Mounting Torque : 5 in-lbs max

Ordering Information

Device	Package	Shipping
MBR10100E3-0-UB-X	TO-220 (Pb-free lead plating package)	50 pcs/tube, 20 tubes/box, 4 boxes / carton



Equivalent Circuit

Outline

Maximum Ratings and Electrical Characteristics (Per Diode 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	Value	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	$I_F=5A, T_C=25^\circ C$	0.85
		$I_F=5A, T_C=125^\circ C$	0.70
		$I_F=10A, T_C=25^\circ C$	0.92
		$I_F=10A, T_C=125^\circ C$	0.80
Maximum Average forward rectified current @ $T_C=168^\circ C$	Per Diode	5	A
	Per Device	10	
Non-repetitive peak forward surge current @ 8.3ms single half sine wave superimposed on rated load (JEDEC method)	I_{FSM}	110	A
Peak repetitive reverse surge current, $T_J < 175^\circ C$ (Note 1)	I_{RRM}	2.5	A
Maximum instantaneous reverse current at	I_R	$V_R=100V, T_C=25^\circ C$	5 μA
		$V_R=100V, T_C=125^\circ C$	5 mA
Voltage rate of change, (rated V_R)	dV/dt	10,000	V/ μs
Typical junction capacitance @ $f=1MHz$ and applied 5V reverse voltage	C_J	110 (typ.)	pF
ESD susceptibility (Note 2)		8000	V
Storage temperature range	T_{stg}	-65~ +175	$^\circ C$
Operating junction temperature range	T_J	-65~ +175	$^\circ C$

Notes : 1. 2.0 μs pulse width, $f=1.0kHz$

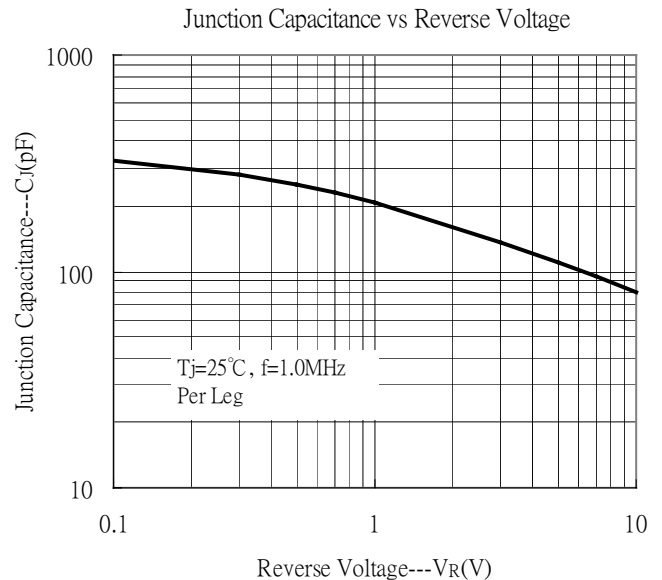
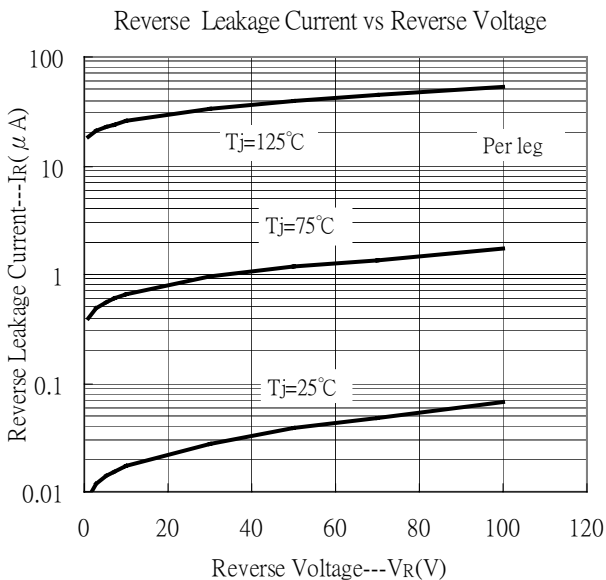
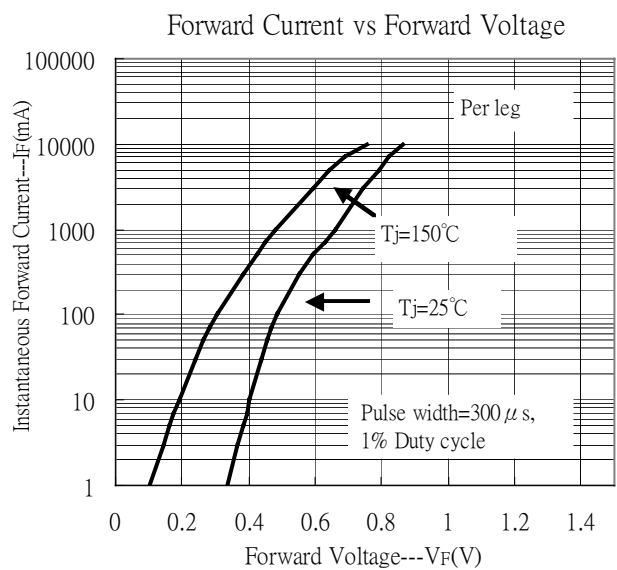
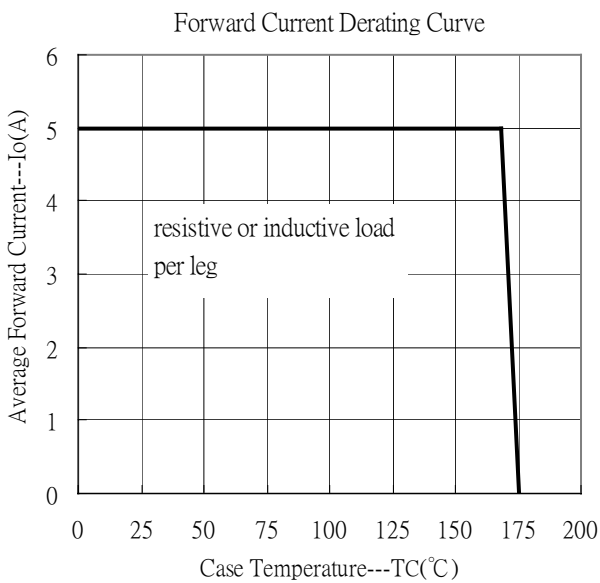
2. Human body model, 1.5k Ω in series with 100pF



Thermal Data

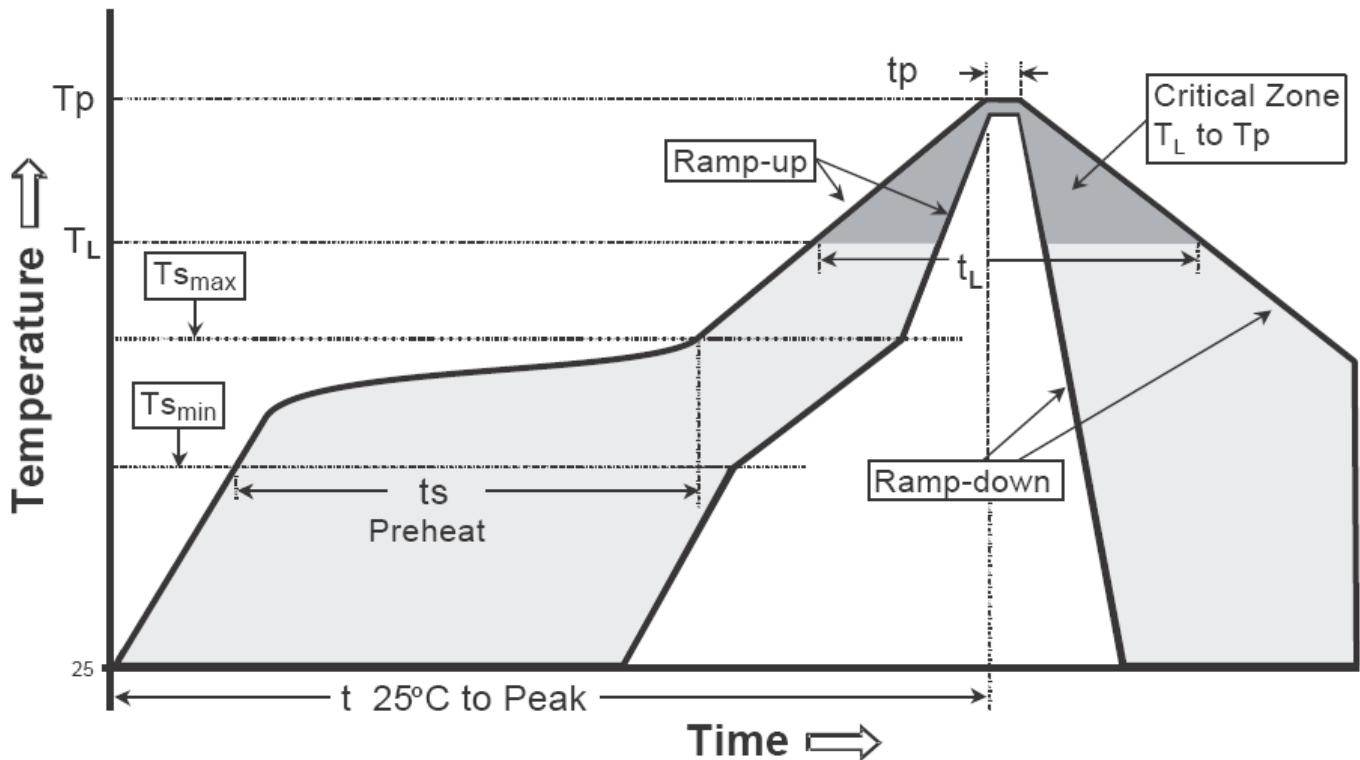
Parameter	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-case	$R_{th,j-c}$	2.0	$^{\circ}C/W$
Maximum Thermal Resistance, Junction-to-ambient	$R_{th,j-a}$	60	$^{\circ}C/W$

Typical Characteristics



Recommended wave soldering condition

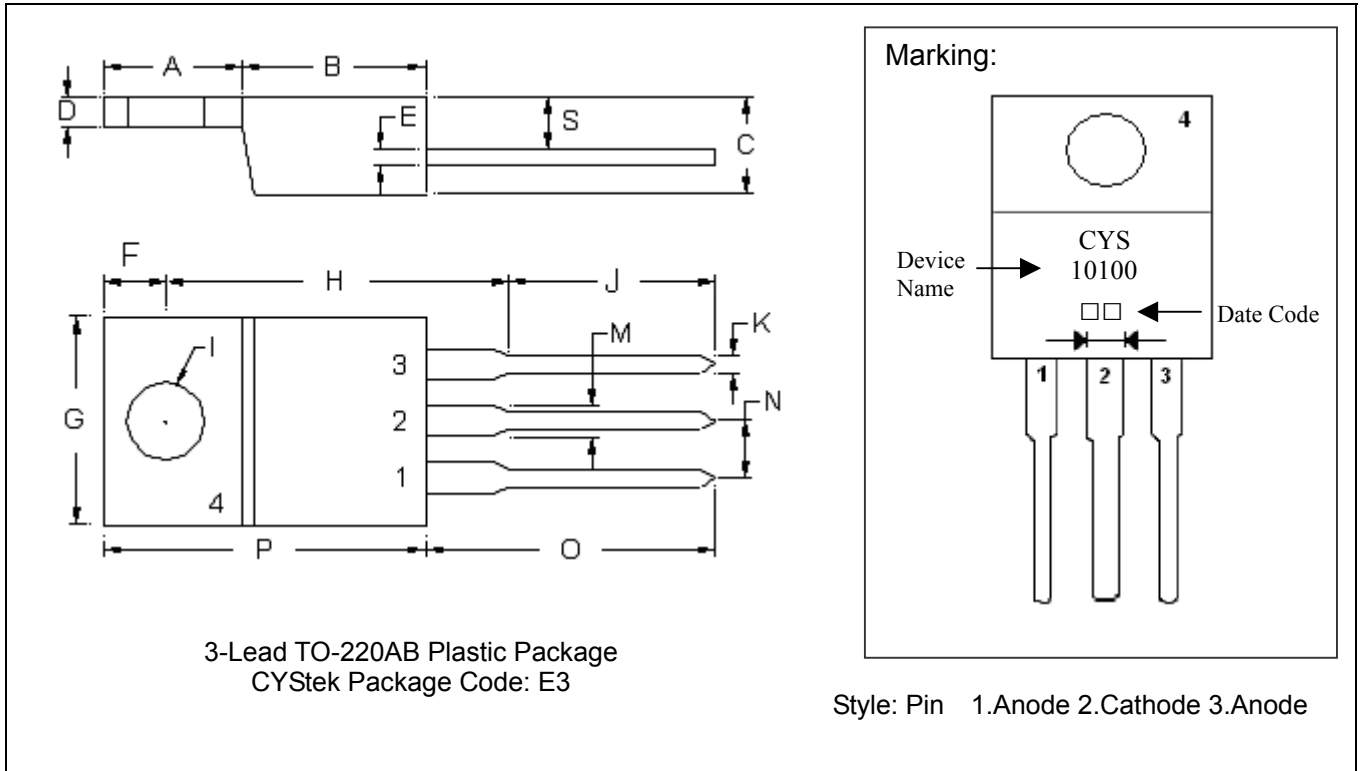
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (TL)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(TP)	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.

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-220AB Dimension



3-Lead TO-220AB Plastic Package
 CYStek Package Code: E3

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

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.2197	0.2949	5.58	7.49	I	-	*0.1508	-	*3.83
B	0.3299	0.3504	8.38	8.90	J	0.3165	0.4449	8.04	11.30
C	0.1732	0.185	4.40	4.70	K	0.0295	0.0374	0.75	0.95
D	0.0453	0.0547	1.15	1.39	M	0.0449	0.0551	1.14	1.40
E	0.0138	0.0236	0.35	0.60	N	-	*0.1000	-	*2.54
F	0.1020	0.1138	2.59	2.89	O	0.5000	0.5618	12.70	14.27
G	0.3803	0.4047	9.66	10.28	P	0.5701	0.6248	14.48	15.87
H	-	*0.6398	-	*16.25	S	0.0992	0.1110	2.52	2.82

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

Material:

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

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