EF10A05 THRU EF10A60

List

List..... 1

Package outline..... 2

Features..... 2

Mechanical data..... 2

Maximum ratings 2

Rating and characteristic curves..... 3

Pinning information.....4

Marking..... 4

Tube packing.....4

Suggested thermal profiles for soldering processes..... 5

High reliability test capabilities.....6

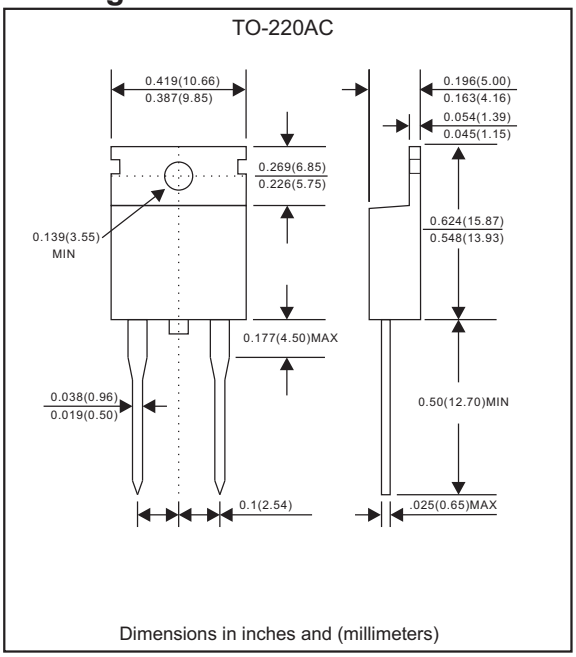
EF10A05 THRU EF10A60

10.0A Glass Passivated
Effciency Fast Rectifiers-50-600V

Features

- Reverse recovery time less than 25ns
- High current capability.
- Low reverse leakage current.
- High surge capability.
- Glass passivated chip junction.
- Low forward drop down voltage.
- High reliability.
- Lead-free parts meet RoHS requirments.
- Suffix "-H" indicates Halogen-free parts, ex. EF10A05-H.

Package outline



Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC TO-220AC molded plastic body over passivated chip
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guranteed
- Polarity: As marked
- Mounting Position : Any
- Weight : Approximated 2.05 gram

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	EF10A05	EF10A10	EF10A20	EF10A40	EF10A60	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	V
Maximum average forward rectified current	I_O	10.0					A
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I_{FSM}	100					A
Typical diode junction capacitance (Note 1)	C_J	60					pF
Operating junction temperature range	T_J	-55 to +150					°C
Storage temperature range	T_{STG}	-65 to +175					°C

Electrical characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	EF10A05	EF10A10	EF10A20	EF10A40	EF10A60	UNIT
Maximum forward voltage at IF=10.0A	V_F	0.98			1.30	1.75	V
Maximum DC reverse current at TJ =25°C at rated DC blocking voltage at TJ =125°C	I_R	5.0 250					uA uA
Maximum reverse recovery time (Note 2)	trr	25					ns

Thermal characteristics

PARAMETER	SYMBOLS	EF10A05	EF10A10	EF10A20	EF10A40	EF10A60	UNIT
Typical thermal resistance junction to case	$R_{\theta JC}$	1.5					°C/W

Note 1: Measure at 1 MHz and applied reverse voltage of 4.0 V D.C.
Note 2: Reverse recovery time test condition, IF=0.5A, IR=1.0A, IRR=0.25A

Rating and characteristic curves (EF10A05 THRU EF10A60)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

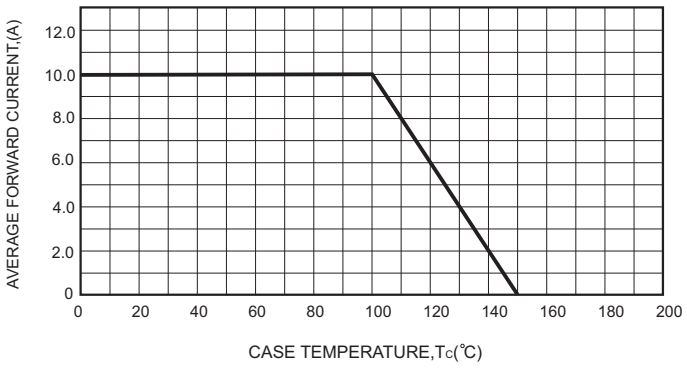


FIG.2-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

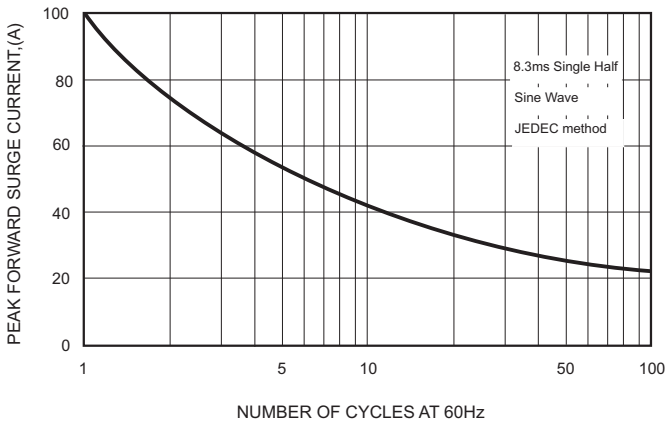


FIG.3-TYPICAL FORWARD CHARACTERISTICS

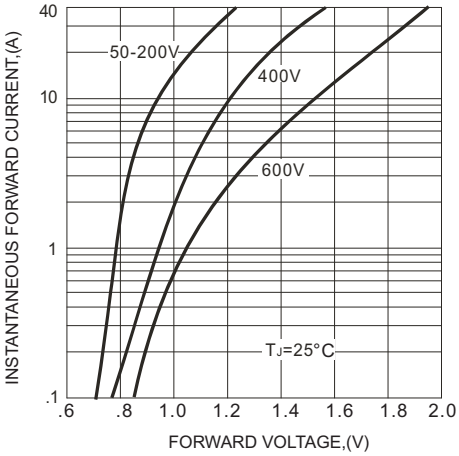


FIG.4 - TYPICAL REVERSE CHARACTERISTICS

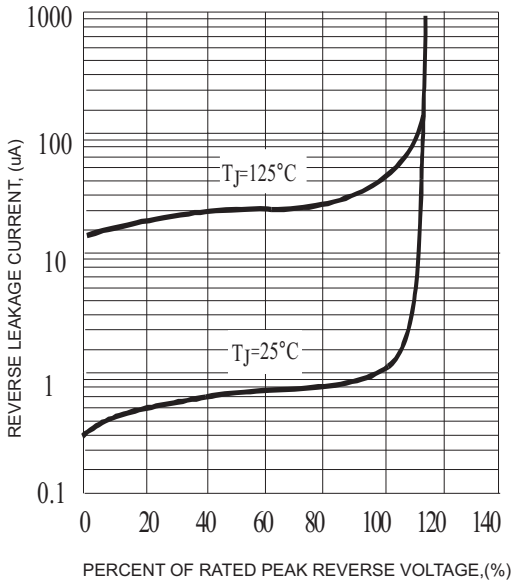
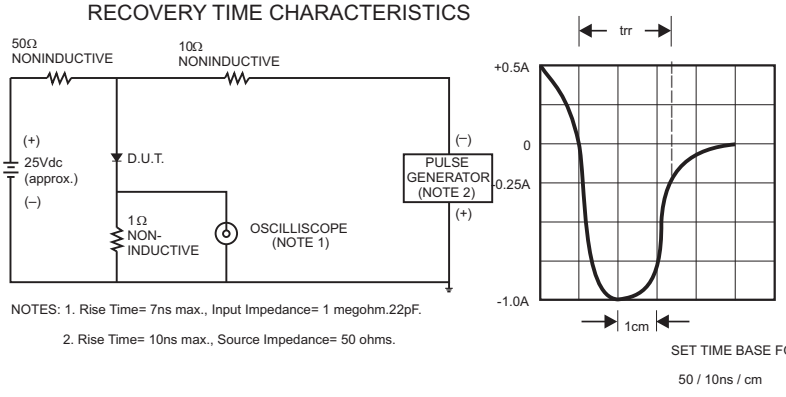


FIG.5- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTICS

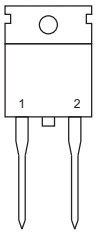
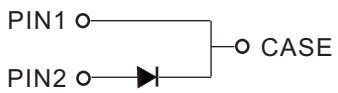


NOTES: 1. Rise Time= 7ns max., Input Impedance= 1 megohm.22pF.

2. Rise Time= 10ns max., Source Impedance= 50 ohms.

EF10A05 THRU EF10A60

Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
EF10A05	EF10A05
EF10A10	EF10A10
EF10A20	EF10A20
EF10A40	EF10A40
EF10A60	EF10A60

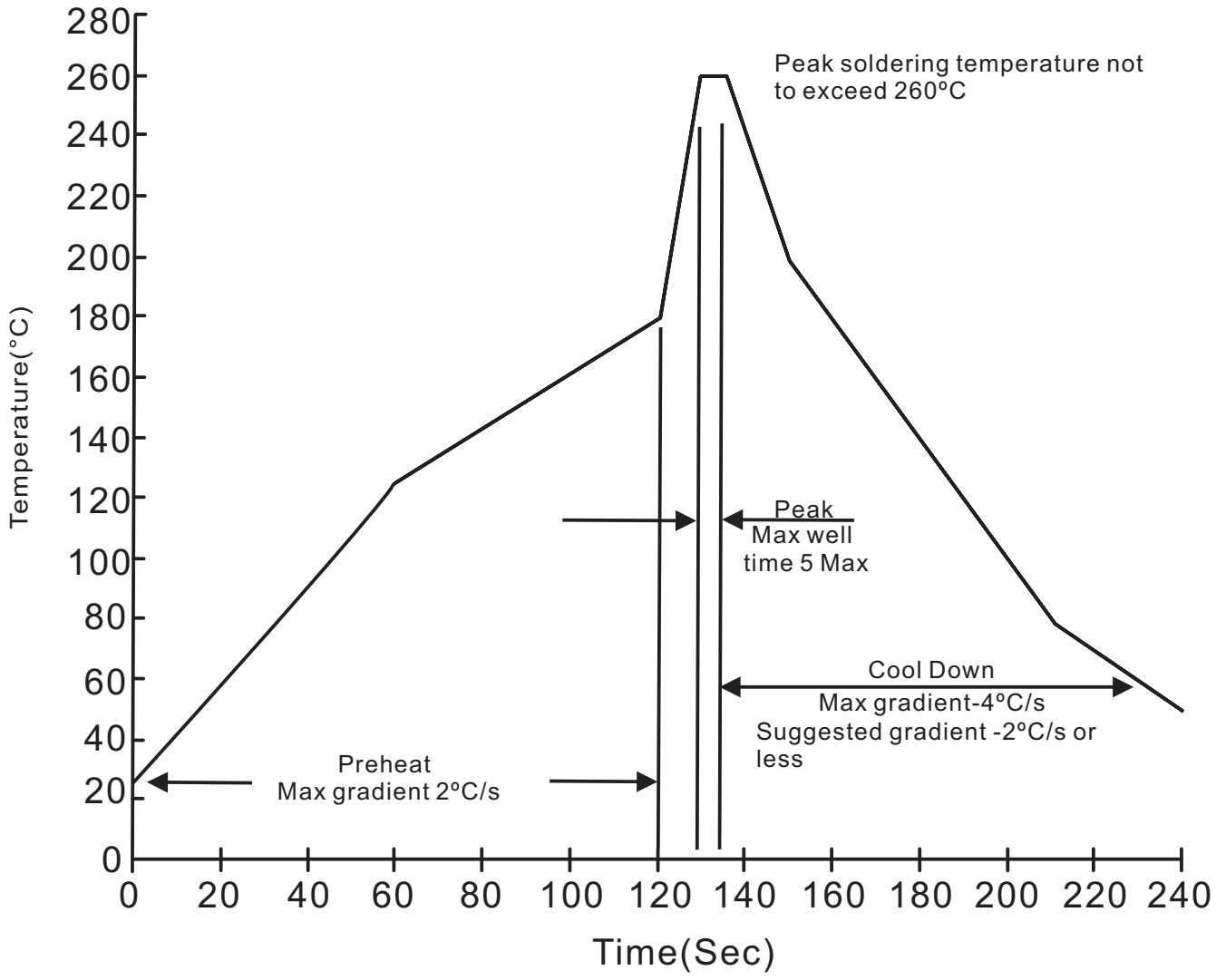
Tube packing

PACKAGE	TUBE (pcs)	TUBE SIZE (m/m)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
TO-220AC	50	525*32*7.5	1000	555*150*40	580*230*175	5,000	15.0

EF10A05 THRU EF10A60

Suggested thermal profiles for soldering processes

1.Lead free temperature profile wave-soldering



EF10A05 THRU EF10A60

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°C, I_F = I_O On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	8.3ms single half sine-wave , one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031