

EREE6006TC

Superfast rectifier data sheet



Photo is representative

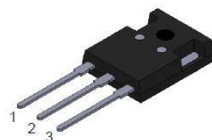
Product features

- Plastic package UL 94V-0
- Low reverse leakage current
- Superfast recovery time and soft recovery characteristics
- Low recovery loss

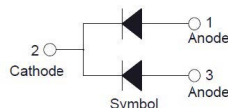
Mechanical data

- Case: TO-247J-3L molded plastic
- Terminals: Tin plated
- Weight: 6.0 grams typical

Package diagram/size and schematic



TO-247J-3L



Applications

- High-frequency rectifier switched-mode power supplies
- Inverters
- Freewheeling diodes
- DC/DC converters
- Other power switching applications

Environmental compliance



Catalog symbol and part numbering system

E	R	E	E	60	06	TC
1	2	3	4	5	6	7

1	E = Eaton
2	R = Rectifier
3	E = Epitaxial process
4	E = Superfast
5	60 = $I_{F(AV)}$: 60 A
6	06 = V_{RRM} : 600 V
7	TC = Package: TO-247J common cathode

Product specifications

Absolute maximum ratings

Rating at +25 °C ambient temperature unless otherwise specified

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	600	V
Maximum RMS voltage	V_{RMS}	420	V
Maximum DC blocking voltage	V_{DC}	600	V
Average forward current at $T_{mb} \leq 105\text{ °C}$	$I_{F(AV)}$	60	A
Peak forward surge current: 10 ms single half sinewave superimposed on rated load	I_{FSM}	180	A
Peak forward surge current: 8.3 ms single half sinewave superimposed on rated load		200	
Operating junction and storage temperature range	T_j, T_{stg}	-55 to +150	°C

Electrical characteristics

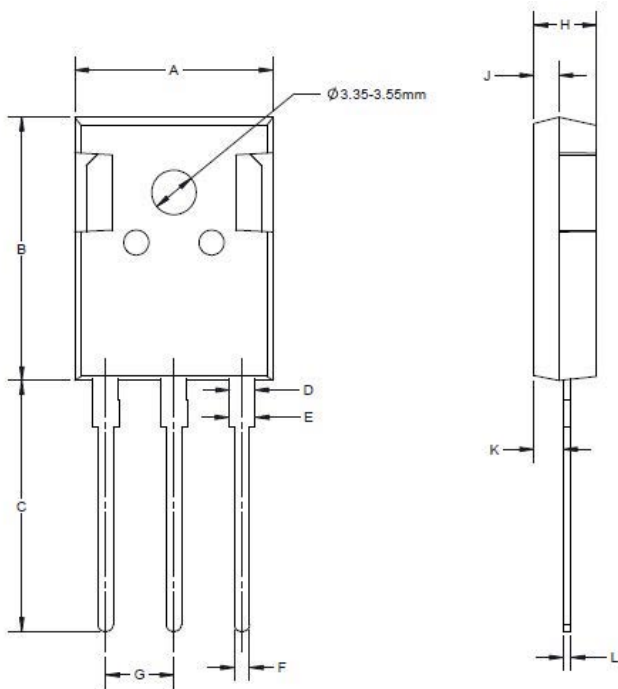
Rating at +25 °C ambient temperature unless otherwise specified

Parameter condition	Test condition	Symbol	Minimum	Typical	Maximum	Unit
Forward voltage @ $I_F = 30\text{ A}$	$T_j = 25\text{ °C}$	V_F	-	1.65	2.0	V
	$T_j = 150\text{ °C}$		-	1.35	-	
Reverse current at rated DC blocking voltage	$T_j = 25\text{ °C}$	I_R	-	-	5.0	µA
	$T_j = 150\text{ °C}$		-	-	400	
Reverse recovery time	$I_F = 30\text{ A}, V_R = 30\text{ V},$ $di/dt = 200\text{ A/}\mu\text{s}, T_j = 25\text{ °C}$	t_{rr}	-	41	90	ns
	$I_F = 30\text{ A}, V_R = 200\text{ V},$ $di/dt = 200\text{ A/}\mu\text{s}, T_j = 25\text{ °C}$		-	51	-	
	$I_F = 30\text{ A}, V_R = 200\text{ V},$ $di/dt = 200\text{ A/}\mu\text{s}, T_j = 125\text{ °C}$		-	90	-	
Peak reverse recovery current	$I_F = 30\text{ A}, V_R = 200\text{ V},$ $di/dt = 200\text{ A/}\mu\text{s}, T_j = 25\text{ °C}$	I_{RM}	-	5.5	-	A
	$I_F = 30\text{ A}, V_R = 200\text{ V},$ $di/dt = 200\text{ A/}\mu\text{s}, T_j = 125\text{ °C}$		-	12.5	-	
Reverse recovered charge	$I_F = 30\text{ A}, V_R = 200\text{ V},$ $di/dt = 200\text{ A/}\mu\text{s}, T_j = 25\text{ °C}$	Q_{rr}	-	160	-	nC
	$I_F = 30\text{ A}, V_R = 200\text{ V},$ $di/dt = 200\text{ A/}\mu\text{s}, T_j = 125\text{ °C}$		-	580	-	

Thermal resistances

Symbol	Parameter	Minimum	Typical	Maximum	Unit
$R_{th(j-a)}$	Thermal resistance from junction to ambient	-	40	-	°C / W
$R_{th(j-mb)}$	Thermal resistance from junction to mounting base, per diode	-	1.17	1.5	°C / W
	Thermal resistance from junction to mounting base, both diodes conducting	-	0.61	0.75	°C / W

Mechanical drawing- mm



Dimension	Minimum	Typical	Maximum
A	15.50	15.80	16.10
B	20.80	21.00	21.20
C	19.70	20.00	20.30
D	1.80	2.00	2.20
E	1.90	2.10	2.30
F	1.00	1.20	1.40
G	-	5.44	-
H	4.80	5.00	5.20
J	1.90	2.00	2.10
K	2.20	2.35	2.50
L	0.41	0.60	0.79

Marking



Product information	
E	Superfast
60	$I_{F(AV)}$: 60 A
06	V_{RRM} : 600 V
TC	Package: TO-247J common cathode

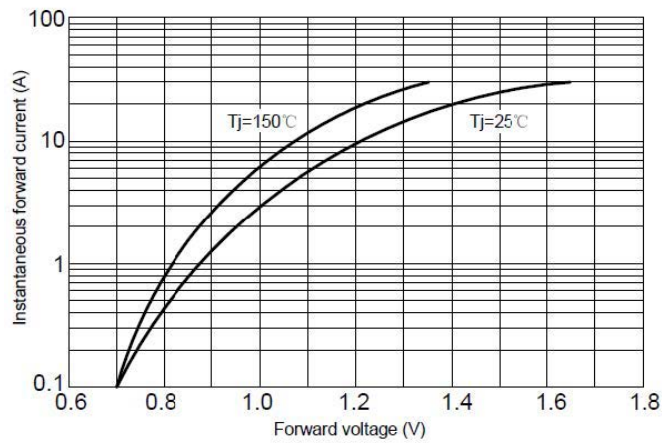
Date code
F35

Packaging information

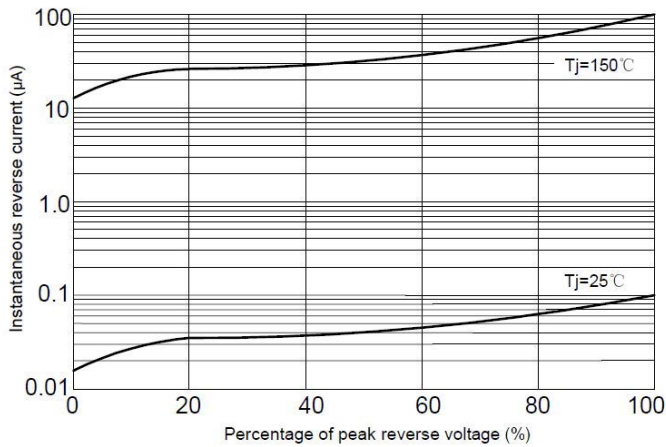
Outline	Unit Weight (g/pcs) typical	Tube (pcs)	Per carton (pcs)
Tube	6.0	30	1,800

Typical characteristics

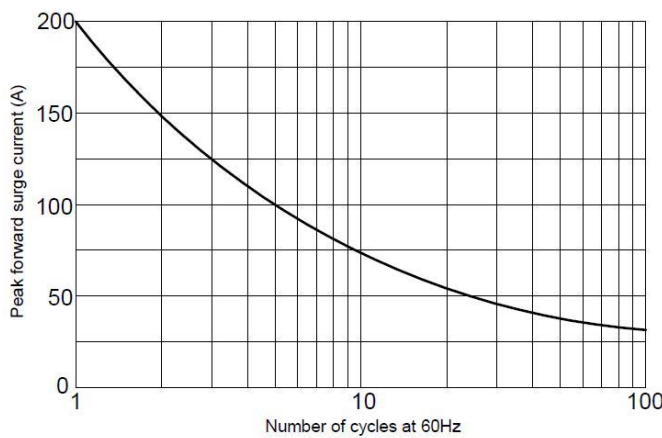
Typical forward characteristics



Typical reverse characteristics



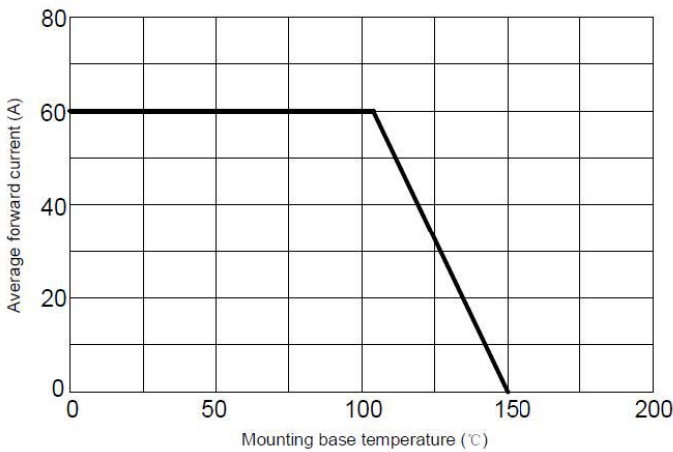
Maximum non-repetitive peak forward surge current
(8.3 ms single half sine-wave) (+25 °C)



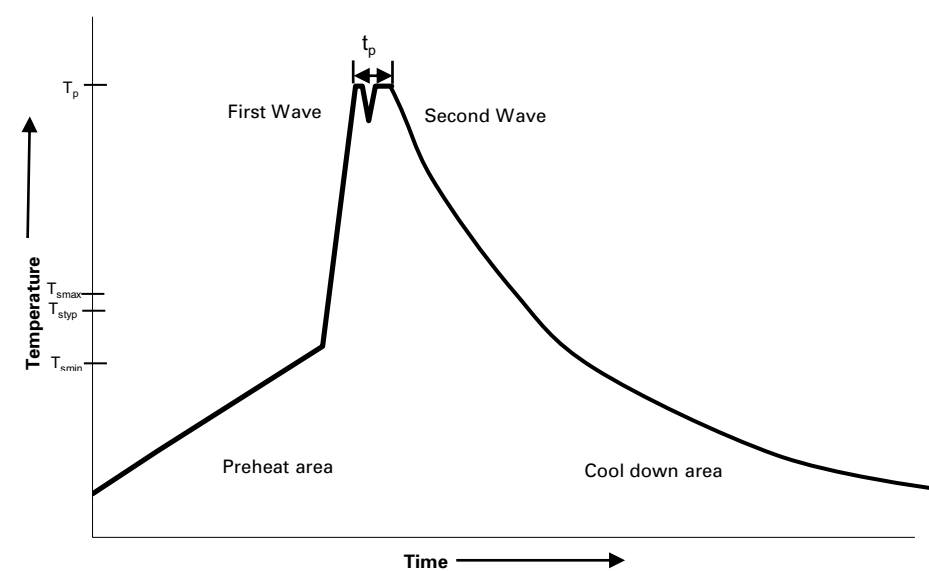
Maximum non-repetitive peak forward surge current
(10 ms single half sine-wave) (+25 °C)



Forward current derating curve



Soldering information



Reference EN 61760-1:2006

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat		
• Temperature minimum (T_{smin})	100 °C	100 °C
• Temperature typical (T_{styp})	120 °C	120 °C
• Temperature maximum (T_{smax})	130 °C	130 °C
• Time (T_{smin} to T_{smax}) (t_s)	70 seconds	70 seconds
Δ preheat to maximum temperature	150 °C max	150 °C max
Peak temperature (T_p)	235 °C to 260 °C	250 °C to 260 °C
Time at peak temperature (t_p)	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~ 3.5 K/s typ ~ 5 K/s max	~ 2 K/s min ~ 3.5 K/s typ ~ 5 K/s max
Time 25 °C to 25 °C	4 minutes	4 minutes

Manual solder

Use a 20 watt soldering iron with tip diameter of 1.0 mm maximum. +350 °C, 4 to 5 seconds maximum, generally manual, hand soldering is not recommended

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