

## Surface Mount Ultrafast Plastic Rectifier

### Major Ratings and Characteristics

$I_{F(AV)}$	2.0 A
$V_{RRM}$	600 V
$I_{FSM}$	90 A
$t_{rr}$	30 ns
$V_F$	1.0 V
$T_j$ max.	150 °C



DO-214AA (SMB)

### Features

- Glass passivated chip junction
- Ideal for automated placement
- Ultrafast recovery times for high efficiency
- Low forward voltage, low power losses
- High forward surge capability
- Meets MSL level 1, per J-STD-020C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEE 2002/96/EC



### Mechanical Data

**Case:** DO-214AA (SMB)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** Color band denotes cathode end

### Typical Applications

For use in high frequency rectification and free-wheeling application in switching mode converters and inverters for consumer, computer, automotive and Telecommunication.

### Maximum Ratings

( $T_A = 25\text{ °C}$  unless otherwise specified)

Parameters	Symbol	USB260	Unit
Device marking code		U60	
Maximum repetitive peak reverse voltage	$V_{RRM}$	600	V
Maximum RMS voltage	$V_{RMS}$	420	V
Maximum DC blocking voltage	$V_{DC}$	600	V
Maximum average forward rectified current (see Fig. 1)	$I_{F(AV)}$	2.0	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	90	A
Non-repetitive avalanche energy at $I_{AS} = 2.0\text{ A}$ , $L = 10\text{ mH}$ , $T_j = 25\text{ °C}$	$E_{AS}$	20	mJ
Operating junction and storage temperature range	$T_j, T_{STG}$	- 55 to + 150	°C

## Electrical Characteristics

( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

Parameters	Test condition	Symbol	Typ.	Max.	Unit
Breakdown voltage	at $I_R = 10\text{ }\mu\text{A}$ $T_J = 25\text{ }^{\circ}\text{C}$	$V_{(BR)}$	600 (minimum)		V
Instantaneous forward voltage <sup>(1)</sup>	at $I_F = 1\text{ A}$ $T_J = 25\text{ }^{\circ}\text{C}$	$V_F$	1.25	-	V
	at $I_F = 2.0\text{ A}$ $T_J = 25\text{ }^{\circ}\text{C}$		1.5	1.6	
	$T_J = 125\text{ }^{\circ}\text{C}$		1.0	1.1	
Maximum reverse current <sup>(1)</sup>	at $V_R = 600\text{ V}$ $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	$I_R$	- 30	5.0 100	$\mu\text{A}$
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	30		ns
Typical junction capacitance	at 4.0 V, 1 MHz	$C_J$	45		pF

Notes:

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

## Thermal Characteristics

( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

Parameters	Symbol	USB260	Unit
Typical thermal resistance <sup>(1)</sup>	$R_{\theta JA}$ $R_{\theta JL}$	45 10	$^{\circ}\text{C/W}$

Notes:

(1) Units mounted on P.C.B. with 2.0 x 2.0" copper pad areas

## Ordering Information

Preferred P/N	Unit Weight (g)	Preferred Package Code	Base Quantity	Delivery Mode
USB260-E3/52T	0.093	52T	750	7" Diameter Plastic Tape & Reel
USB260-E3/5BT	0.093	5BT	3200	13" Diameter Plastic Tape & Reel

## Ratings and Characteristics Curves

( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

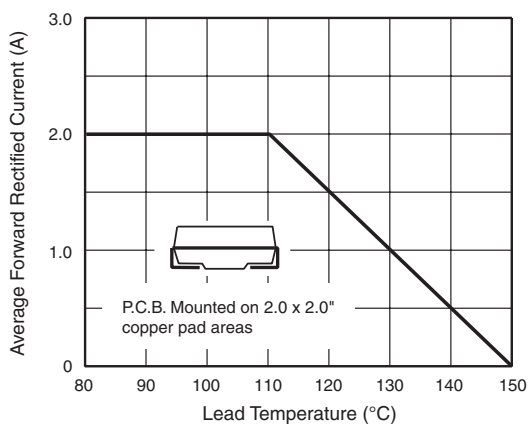


Figure 1. Maximum Forward Current Derating Curve

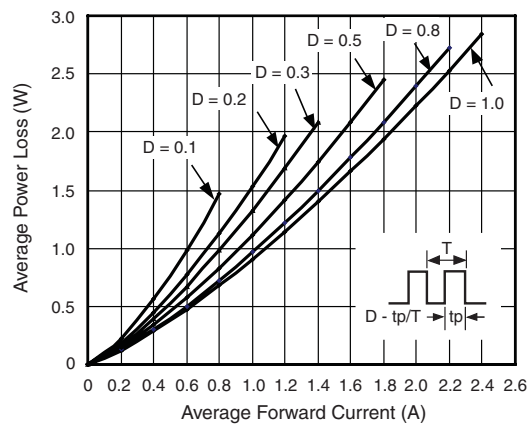


Figure 2. Forward Power Loss Characteristics

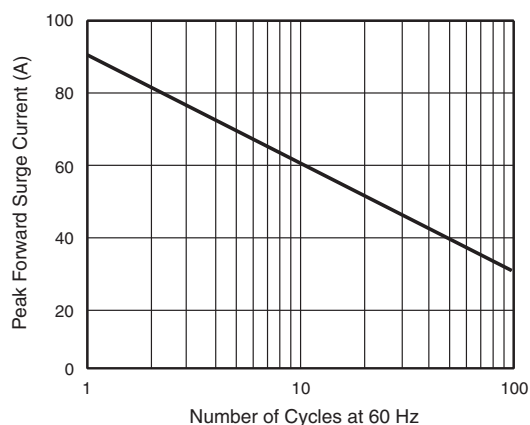


Figure 3. Maximum Non-Repetitive Peak Forward Surge Current

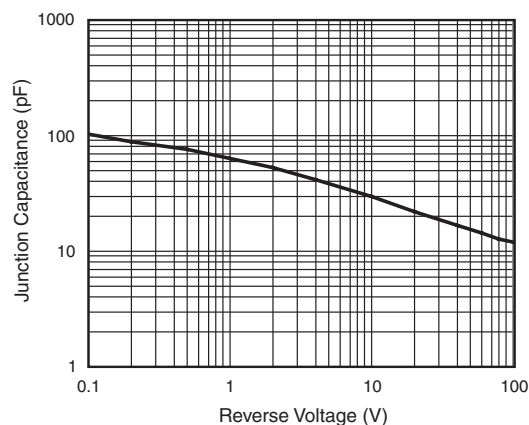


Figure 6. Typical Junction Capacitance

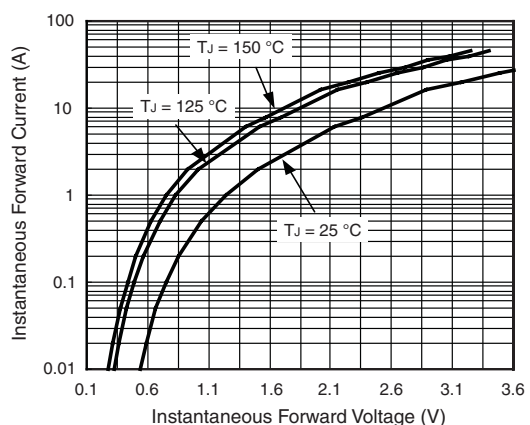


Figure 4. Typical Instantaneous Forward Characteristics

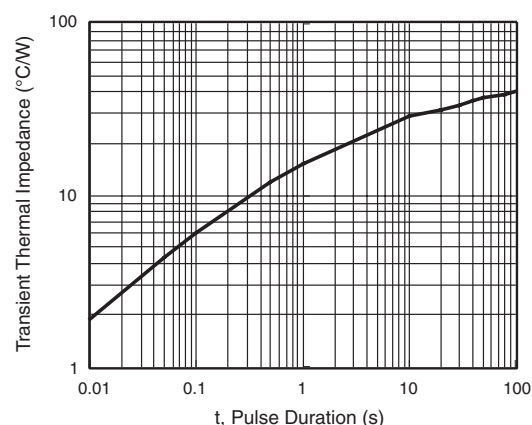


Figure 7. Typical Transient Thermal Impedance

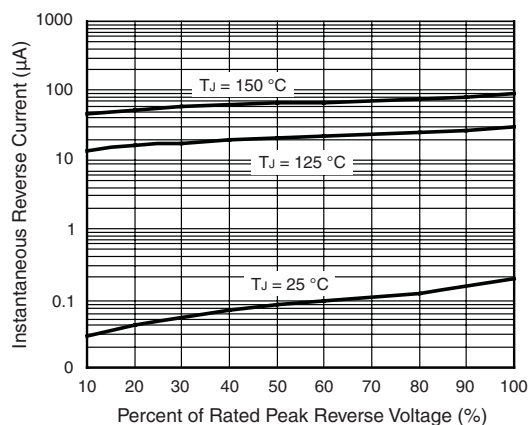
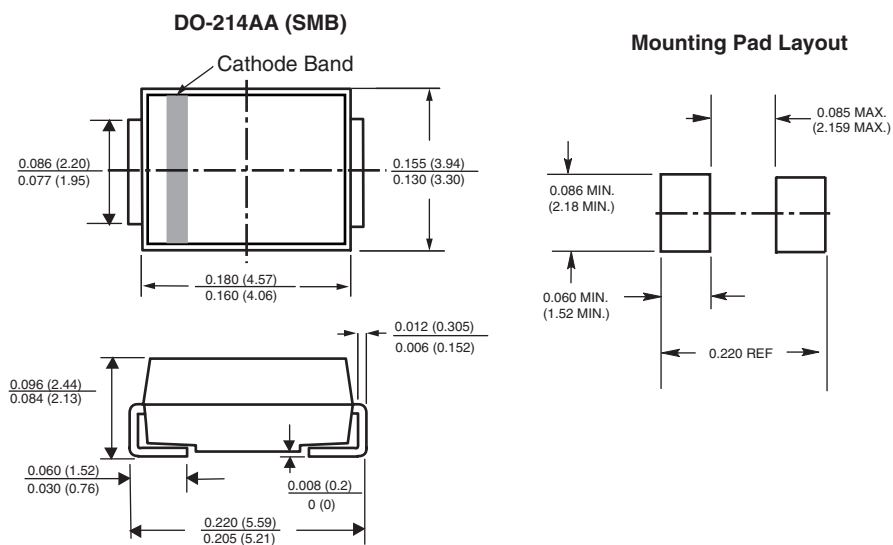


Figure 5. Typical Reverse Leakage Characteristics

## Package outline dimensions in inches (millimeters)





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