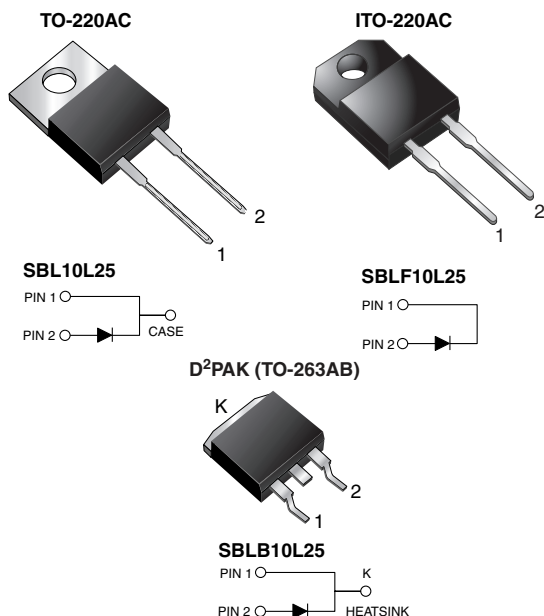


## Low $V_F$ Schottky Barrier Rectifier



### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
$V_{RRM}$	25 V
$I_{FSM}$	240 A
$V_F$	0.35 V
$T_J \text{ max.}$	150 °C
Package	TO-220AC, ITO-220AC, D <sup>2</sup> PAK (TO-263AB)
Circuit configuration	Single

### FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Very low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C for D<sup>2</sup>PAK (TO-263AB) package
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified available
  - Automotive ordering code:
    - Base P/NHE3 (for ITO-220AC)
    - Base P/NHM3 (for D<sup>2</sup>PAK (TO-263AB) package)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
**HALOGEN**  
**FREE**  
Available

### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, and polarity protection application.

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, D<sup>2</sup>PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Molding compound meets UL 94 V-0 flammability rating

Base P/NHE3\_X - RoHS-compliant, AEC-Q101 qualified ("\_X" denotes revision code, e.g. A, B, ...)

Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

Base P/NHM3 - RoHS-compliant, halogen-free, AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** as marked

**Mounting Torque:** 10 in-lbs maximum

**MAXIMUM RATINGS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	SBL10L25 SBLB10L25 SBLF10L25	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	25	V
Working peak reverse voltage	$V_{RWM}$	18	
Maximum DC blocking voltage	$V_{DC}$	25	
Maximum average forward rectified current at $T_C = 135\text{ }^{\circ}\text{C}$	$I_{F(AV)}$	10	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	240	
Peak repetitive reverse surge current at $t_p = 2.0\text{ }\mu\text{s}$ , 1 kHz	$I_{RRM}$	1.0	
Voltage rate of change (rated $V_R$ )	$dV/dt$	10 000	V/ $\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$	-65 to +150	$^{\circ}\text{C}$
Isolation voltage (ITO-220AC only) from terminal to heatsink $t = 1\text{ min}$	$V_{AC}$	1500	V

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
Maximum instantaneous forward voltage	$V_F^{(1)}$	$I_F = 10\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	0.46	V
		$I_F = 10\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$	0.35	
		$I_F = 20\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	0.55	
		$I_F = 20\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$	0.48	
Maximum instantaneous reverse current at DC blocking voltage	$I_R^{(2)}$	Rated $V_R$	$T_J = 25\text{ }^{\circ}\text{C}$	0.80	mA
			$T_J = 125\text{ }^{\circ}\text{C}$	260	

**Notes**(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle(2) Pulse test: pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	SBL10L25	SBLF10L25	SBLB10L25	UNIT
Typical thermal resistance from junction to case per leg	$R_{\theta JC}$	1.5	4.0	1.5	$^{\circ}\text{C/W}$

**ORDERING INFORMATION**

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	SBL10L25-E3/45	1.80	45	50/tube	Tube
ITO-220AC	SBLF10L25-E3/45	1.94	45	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	SBLB10L25-M3/I	1.33	I	800/reel	Tape and reel
ITO-220AC	SBLF10L25HE3_A/P <sup>(1)</sup>	1.94	P	50/tube	Tube
D <sup>2</sup> PAK (TO-263AB)	SBLB10L25HM3/I <sup>(1)</sup>	1.33	I	800/reel	Tape and reel

**Note**<sup>(1)</sup> AEC-Q101 qualified, available in ITO-220AC and D<sup>2</sup>PAK (TO-263AB)



## RATINGS AND CHARACTERISTICS CURVES ( $T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

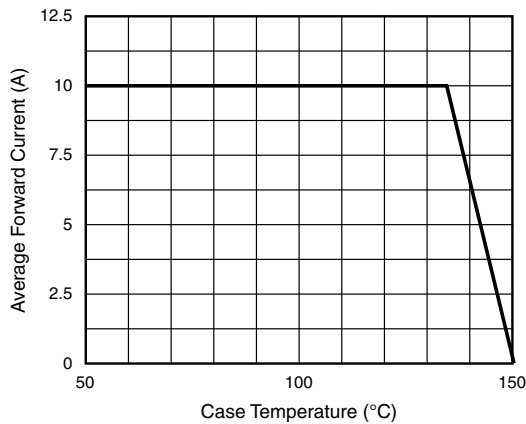


Fig. 1 - Forward Current Derating Curve

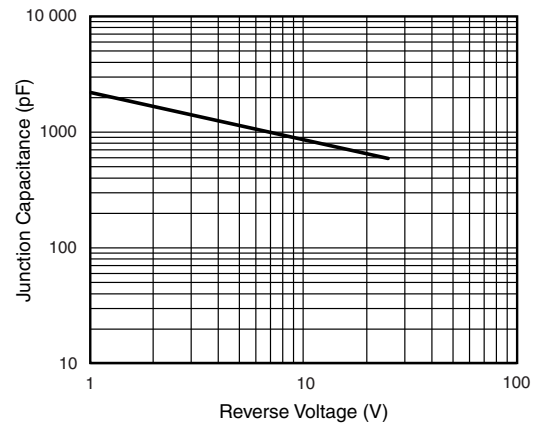


Fig. 4 - Typical Junction Capacitance

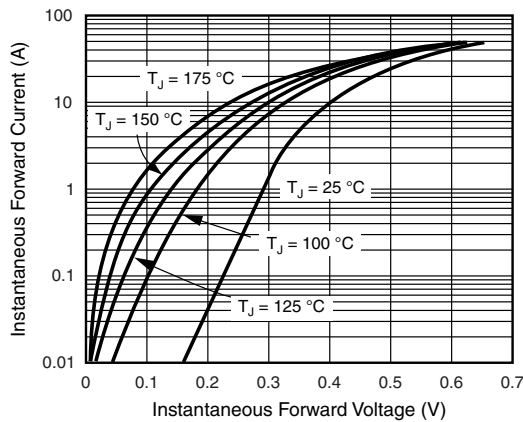


Fig. 2 - Typical Instantaneous Forward Characteristics

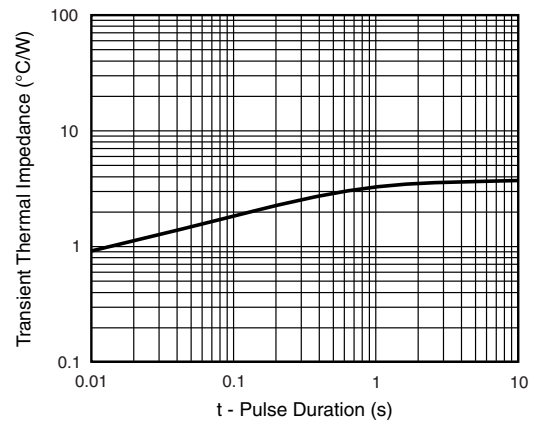


Fig. 5 - Typical Transient Thermal Impedance

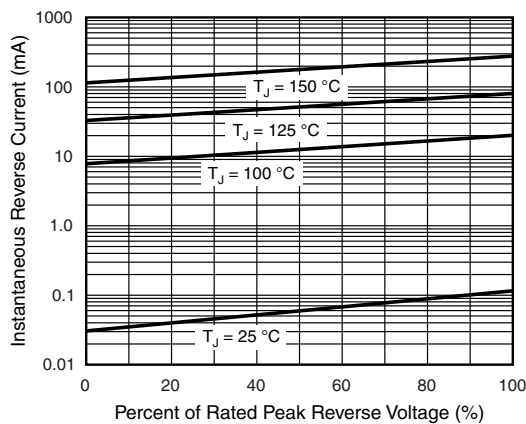
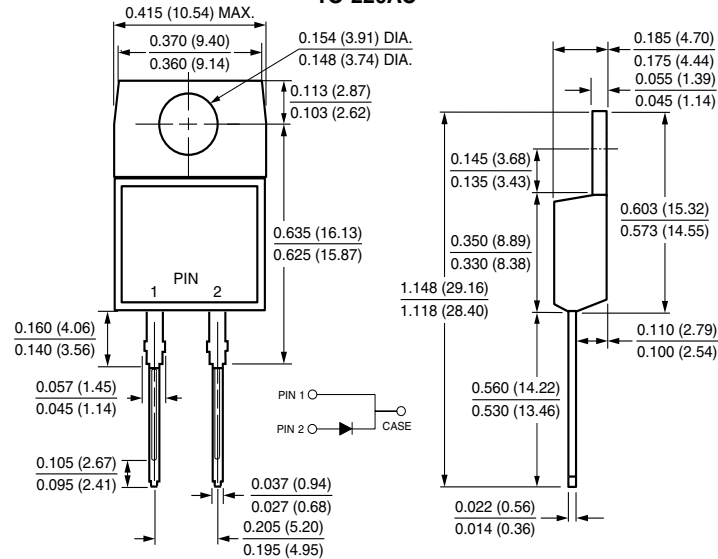


Fig. 3 - Typical Reverse Characteristics

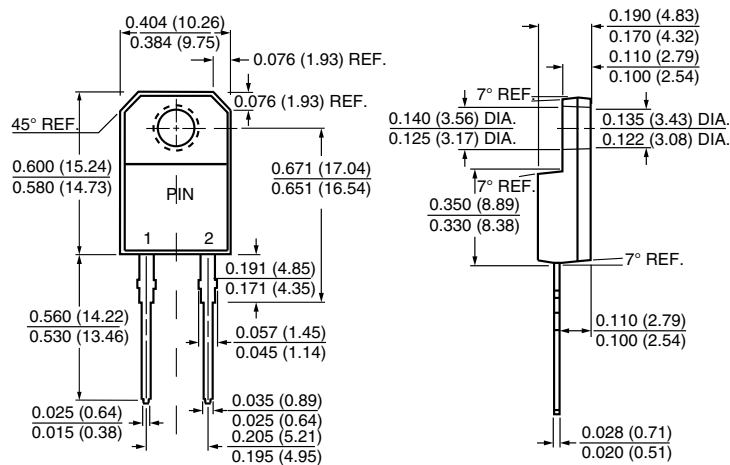


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

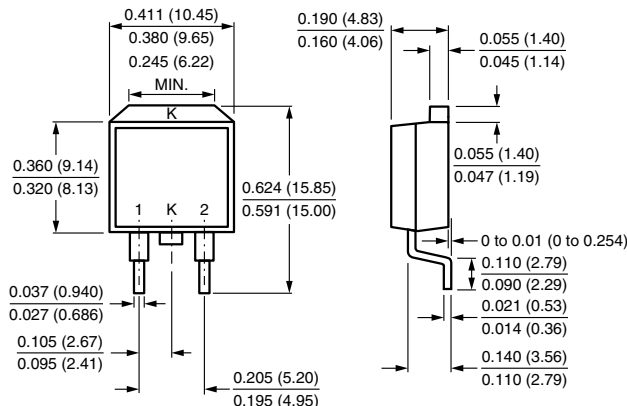
### TO-220AC



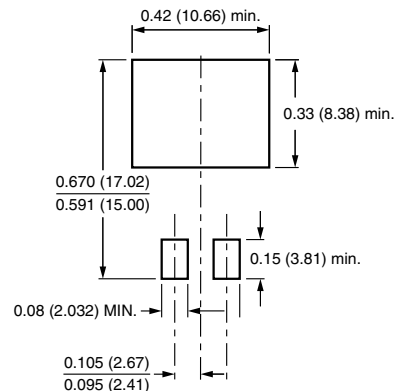
### ITO-220AC



### D<sup>2</sup>PAK (TO-263AB)



### Mounting Pad Layout





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