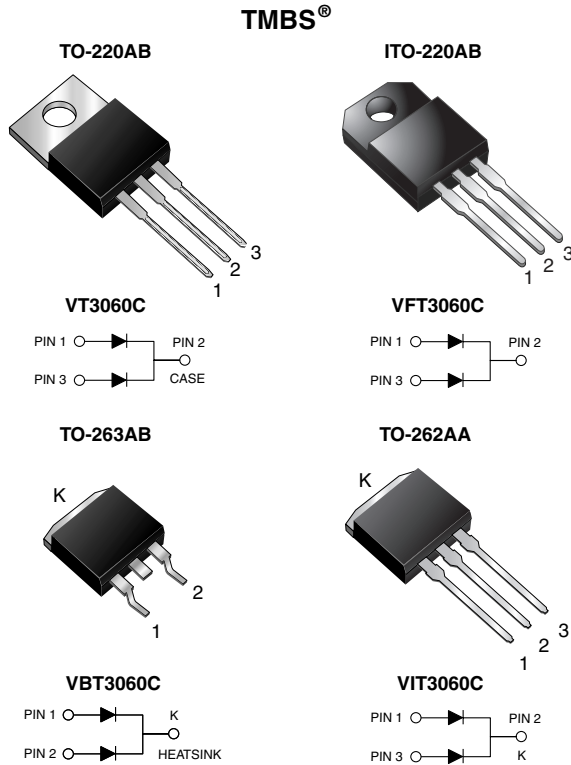




## Dual High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.38\text{ V}$  at  $I_F = 5\text{ A}$



### FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AB, ITO-220AB and TO-262AA package)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, freewheeling diodes, OR-ing diode, dc-to-dc converters and reverse battery protection.

### MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, TO-263AB and TO-262AA

Molding compound meets UL 94 V-0 flammability rating

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

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

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** As marked

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

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
$V_{RRM}$	60 V
$I_{FSM}$	170 A
$V_F$ at $I_F = 15\text{ A}$	0.57 V
$T_J$ max.	150 °C

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	VT3060C	VFT3060C	VBT3060C	VIT3060C	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	60				V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	30 15				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	170				A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $L = 60\text{ mH}$ per diode	$E_{AS}$	180				mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode	$I_{RRM}$	1.0				A
Isolation voltage (ITO-220AB only) from terminal to heatsink $t = 1\text{ min}$	$V_{AC}$	1500				V
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150				°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	60 (minimum)	-	V
Instantaneous forward voltage per diode <sup>(1)</sup>	I <sub>F</sub> = 5 A I <sub>F</sub> = 7.5 A I <sub>F</sub> = 15 A	T <sub>A</sub> = 25 °C	V <sub>F</sub>	0.47 0.51 0.60	- - 0.70	V
	I <sub>F</sub> = 5 A I <sub>F</sub> = 7.5 A I <sub>F</sub> = 15 A	T <sub>A</sub> = 125 °C		0.38 0.44 0.57	- - 0.65	
Reverse current per diode <sup>(2)</sup>	V <sub>R</sub> = 60 V	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C	I <sub>R</sub>	- 20	1.2 45	mA

Notes:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	VT3060C	VFT3060C	VBT3060C	VIT3060C	UNIT
Typical thermal resistance per diode per device	R <sub>θJC</sub>	2.5 1.7	6.0 4.8	2.5 1.7	2.5 1.7	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	VT3060C-E3/4W	1.89	4W	50/tube	Tube
ITO-220AB	VFT3060C-E3/4W	1.76	4W	50/tube	Tube
TO-263AB	VBT3060C-E3/4W	1.39	4W	50/tube	Tube
TO-263AB	VBT3060C-E3/8W	1.39	8W	800/reel	Tape and reel
TO-262AA	VIT3060C-E3/4W	1.46	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T<sub>A</sub> = 25 °C unless otherwise noted)

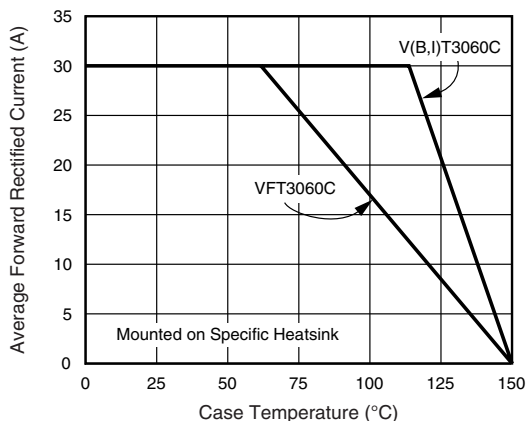


Figure 1. Maximum Forward Current Derating Curve

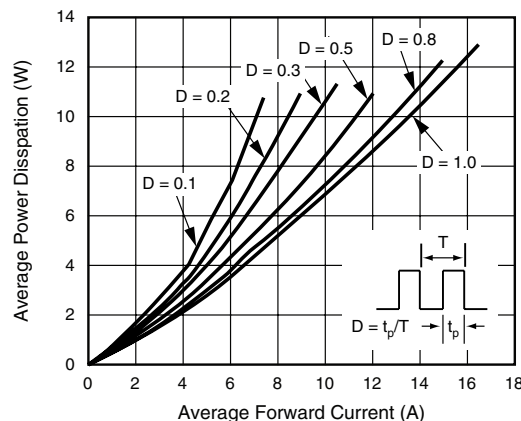


Figure 2. Forward Power Dissipation Characteristics Per Diode

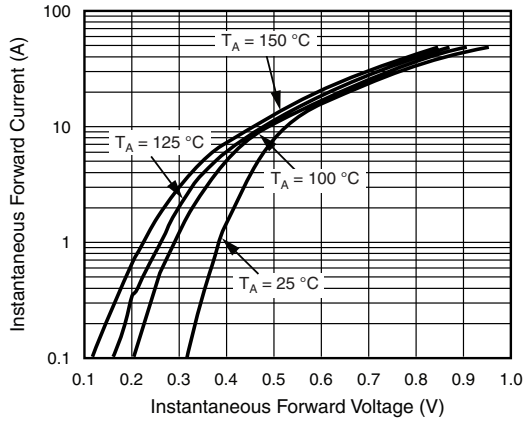


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

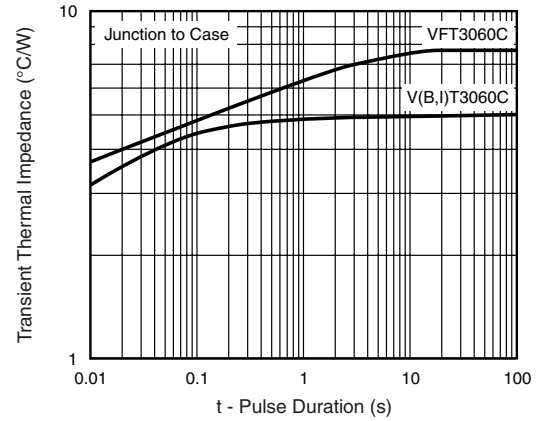


Figure 5. Typical Transient Thermal Impedance Per Diode

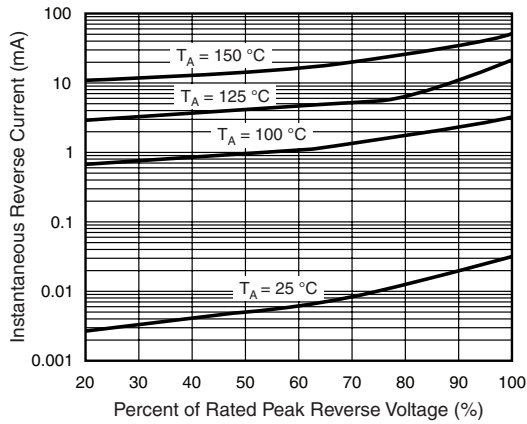


Figure 4. Typical Reverse Characteristics Per Diode

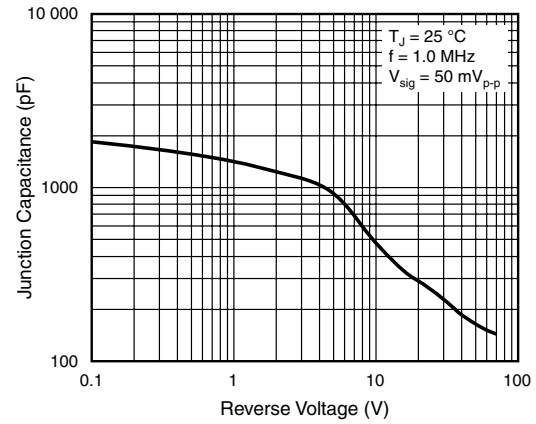


Figure 6. Typical Junction Capacitance Per Diode





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