

## 2SJ607-Z-VB Datasheet

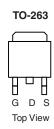
# P-Channel 60-V (D-S) 175 °C MOSFET

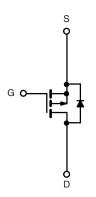
PRODUCT SUMMARY				
V <sub>DS</sub> (V)	$R_{DS(on)}(\Omega)$	I <sub>D</sub> (A) <sup>d</sup>		
- 60	0.0065 at V <sub>GS</sub> = - 10 V	- 110		
	0.0085 at V <sub>GS</sub> = - 4.5 V			

#### **FEATURES**

- Trench Power MOSFET
- · Package with Low Thermal Resistance
- 100 % R<sub>g</sub> Tested







P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS $T_C = 2$	5 °C, unless other	wise noted			
Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		V <sub>DS</sub>	- 60	V	
Gate-Source Voltage		V <sub>GS</sub>	± 20	V	
Continuous Drain Current <sup>d</sup>	T <sub>C</sub> = 25 °C	I_	- 110		
$(T_J = 175  ^{\circ}C)$	T <sub>C</sub> = 125 °C	I <sub>D</sub>	- 75	Α	
Pulsed Drain Current	·		- 200	_ ^	
Avalanche Current	L = 0.1 mH	I <sub>AS</sub>	- 85		
Single Pulse Avalanche Energy <sup>d</sup>	L = 0.1 Min	E <sub>AS</sub>	211	mJ	
Maximum Power Dissipation	T <sub>C</sub> = 25 °C	В	272 <sup>c</sup>	14/	
	T <sub>A</sub> = 25 °C <sup>b</sup>	P <sub>D</sub>	3.75 <sup>b</sup>	W	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	- 55 to 175	°C	

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Limit	Unit	
Junction-to-Ambient	PCB Mount <sup>d</sup>	$R_{thJA}$	40	°C/W	
Junction-to-Case		R <sub>thJC</sub>	0.55	C/VV	

#### Notes

- a. Duty cycle  $\leq$  1 %.
- b. When Mounted on 1" square PCB (FR-4 material).
- c. See SOA curve for voltage derating.
- d. Limited by Package.

<sup>\*</sup> Pb containing terminations are not RoHS compliant, exemptions may apply.



<b>SPECIFICATIONS</b> $T_J = 25^{\circ}$ Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Static	1 -7						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	$V_{GS} = 0 \text{ V, } I_D = -250 \mu\text{A}$	- 60			.,	
Gate-Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	- 1		- 3	V	
Gate-Body Leakage	I <sub>GSS</sub>	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zero Gate Voltage Drain Current		V <sub>DS</sub> = - 60 V, V <sub>GS</sub> = 0 V			- 1		
	I <sub>DSS</sub>	V <sub>DS</sub> = - 60 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125 °C			- 50	μΑ	
		V <sub>DS</sub> = - 60 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 175 °C			- 250	1	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = - 5 V, V <sub>GS</sub> = - 10 V	- 120			Α	
Drain-Source On-State Resistance <sup>a</sup>		V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 30 A		0.0065			
		V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 30 A, T <sub>J</sub> = 125 °C		0.0129		1	
	R <sub>DS(on)</sub>	V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 30 A, T <sub>J</sub> = 175 °C		0.016		Ω	
		V <sub>GS</sub> = - 4.5 V, I <sub>D</sub> = - 20 A		0.0085			
Forward Transconductance <sup>a</sup>	9 <sub>fs</sub>	V <sub>DS</sub> = - 15 V, I <sub>D</sub> = - 50 A	20			S	
Dynamic <sup>b</sup>	•			'			
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = - 25 V, f = 1 MHz		9200		pF	
Output Capacitance	C <sub>oss</sub>			975			
Reverse Transfer Capacitance	C <sub>rss</sub>	]		760			
Total Gate Charge <sup>c</sup>	Qg			160	240	nC	
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>	V <sub>DS</sub> = - 30 V, V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 110 A		40			
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>	]		36			
Gate Resistance	R <sub>g</sub>	f = 1 MHz	1.5	3	4.5	Ω	
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>			20	30		
Rise Time <sup>c</sup>	t <sub>r</sub>	$V_{DD} = -30 \text{ V}, R_{L} = 0.27 \Omega$		190	285	ns	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>	$I_D \cong$ - 110 A, $V_{GEN} =$ - 10 V, $R_G = 2.5 \Omega$		140	210		
Fall Time <sup>c</sup>	t <sub>f</sub>	1		300	450		
Source-Drain Diode Ratings and Cha	aracteristics	T <sub>C</sub> = 25 °C <sup>b</sup>					
Continuous Current	I <sub>S</sub>				- 110	A	
Pulsed Current	I <sub>SM</sub>				- 200		
Forward Voltage <sup>a</sup>	$V_{SD}$	I <sub>F</sub> = - 50 A, V <sub>GS</sub> = 0 V		- 1.0	- 1.5	V	
Reverse Recovery Time	t <sub>rr</sub>			60	90	ns	
Peak Reverse Recovery Charge	I <sub>RM(REC)</sub>	I <sub>F</sub> = - 50 A, di/dt = 100 A/μs		- 3	- 4.5	Α	
Reverse Recovery Charge	Q <sub>rr</sub>	1		0.09	0.2	μС	

#### Notes:

2

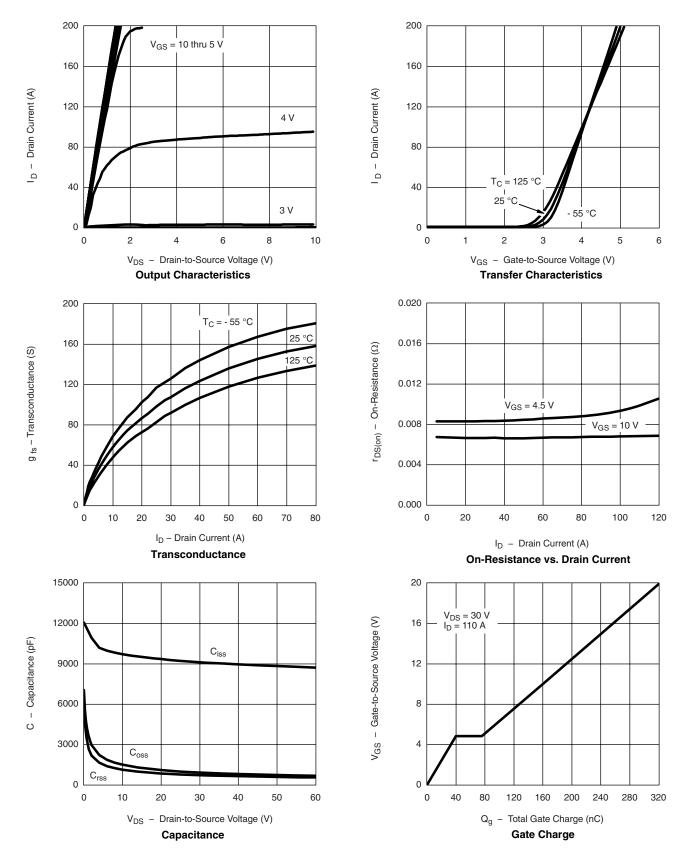
- a. Pulse test; pulse width  $\leq$  300  $\mu$ s, duty cycle  $\leq$  2 %.
- b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

服务热线:400-655-8788

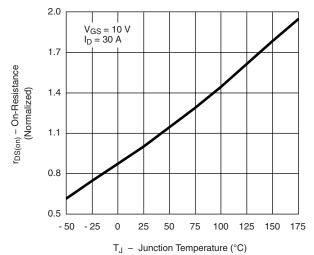


### TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

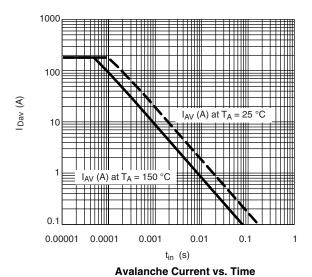


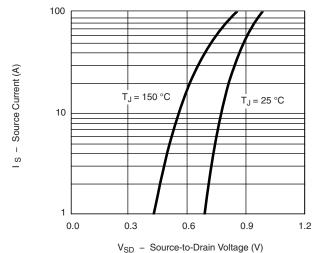


## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

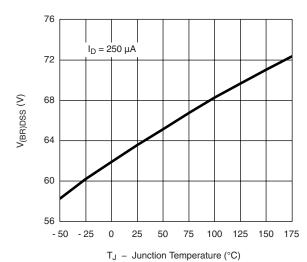


On-Resistance vs. Junction Temperature





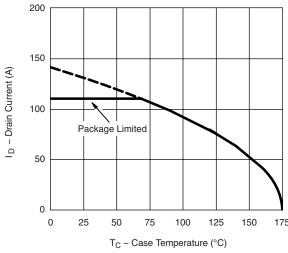
Source-Drain Diode Forward Voltage



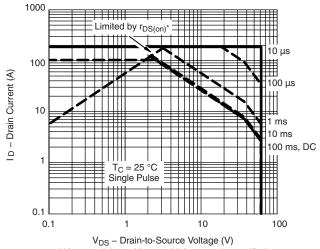
Drain Source Breakdown vs.
Junction Temperature



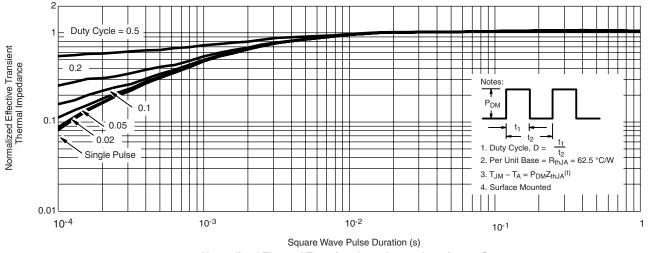
#### THERMAL RATINGS



Maximum Avalanche and Drain Current vs. Case Temperature



 $V_{DS}$  – Drain-to-Source Voltage (V) \*  $V_{GS}$  > minimum  $V_{GS}$  at which  $r_{DS(on)}$  is specified Safe Operating Area



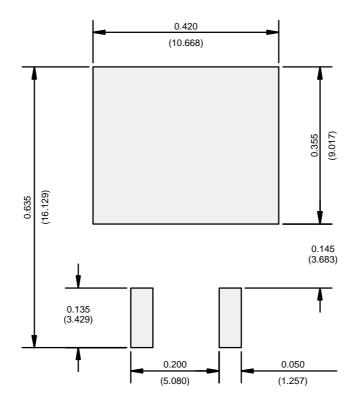
Normalized Thermal Transient Impedance, Junction-to-Case

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5



## RECOMMENDED MINIMUM PADS FOR D<sup>2</sup>PAK: 3-Lead



Recommended Minimum Pads Dimensions in Inches/(mm)

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