

### Features

- Very low FOM  $R_{DS(on)} \times Q_g$
- 100% avalanche tested

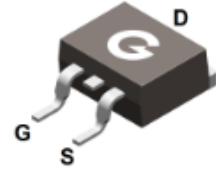
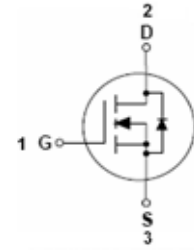
HF

### APPLICATIONS

- SMPS
- UPS
- PFC

### Mechanical Data

- Case: TO-263
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-263

## Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
SJ80R350B	TO-263	50 pcs / Tube & 800 pcs / Tape & Reel	SJ80R350B

## Maximum Ratings (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DSS}$	800	V
Gate-to-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	15	A
Pulsed Drain Current <sup>*1</sup>	$I_{DM}$	45	A
Single Pulse Avalanche Energy <sup>*2</sup>	$E_{AS}$	324	mJ
Avalanche Current <sup>*1</sup>	$I_{AR}$	4	A
Repetitive Avalanche Energy <sup>*1</sup>	$E_{AR}$	0.75	mJ

## Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	$P_D$	34	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.83	$^\circ\text{C/W}$
Operating Junction Temperature Range	$T_J$	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

### Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
$V_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	800	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 800V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	-	-	1	$\mu A$
		$V_{DS} = 800V, V_{GS} = 0V, T_J = 150^\circ\text{C}$	-	-	100	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$R_{DS(ON)}$	Static Drain-Source On-resistance <sup>*3</sup>	$V_{GS} = 10V, I_D = 7.5A$	-	0.26	0.35	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	-	4.5	V
$g_{fs}$	Forward Transconductance <sup>*3</sup>	$V_{GS} = 10V, I_D = 7.5A$	-	18.8	-	S
<b>Dynamic Characteristics</b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 50V$ $f = 1.0\text{MHz}$	-	2330	-	pF
$C_{OSS}$	Output Capacitance		-	116	-	
$C_{RSS}$	Reverse Transfer Capacitance		-	7	-	
<b>Switching Characteristics</b>						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 400V$ $R_G = 25\Omega$ $I_D = 15A$	-	43	-	ns
$t_r$	Turn-on Rise Time		-	14	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	150	-	
$t_f$	Turn-Off Fall Time		-	7	-	
$Q_G$	Total Gate-Charge	$V_{DD} = 640V$ $V_{GS} = 10V$ $I_D = 15A$	-	46	-	nC
$Q_{GS}$	Gate to Source Charge		-	11	-	
$Q_{GD}$	Gate to Drain (Miller) Charge		-	13	-	
<b>Source-Drain Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$I_{SD} = 15A, V_{GS} = 0V, T_J = 25^\circ\text{C}$	-	0.9	1.2	V
$I_S$	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$	-	-	15	A
$I_{SM}$	Pulsed Source-Drain Current		-	-	45	A
$t_{rr}$	Reverse Recovery Time	$I_S = I_F, V_R = 400V$	-	460	-	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt = 100 A/\mu s$	-	3.8	-	$\mu C$

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2.  $I_{AS} = 4A, V_{DD} = 50V, R_G = 25\Omega$ , Starting  $T_J = 25^\circ\text{C}$
3. Pulse Test: Pulse width  $\leq 300\mu s$ , Duty Cycle  $\leq 1\%$

Ratings and Characteristics Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

Figure 1. Output Characteristics

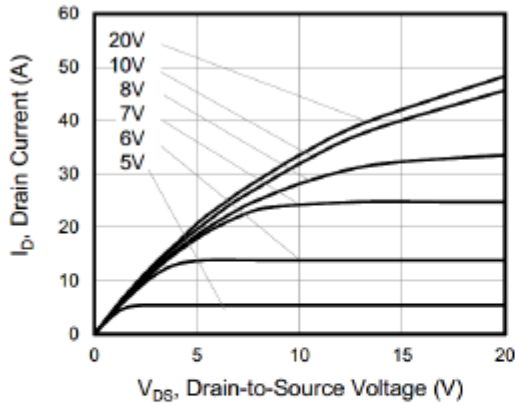


Figure 2. Transfer Characteristics

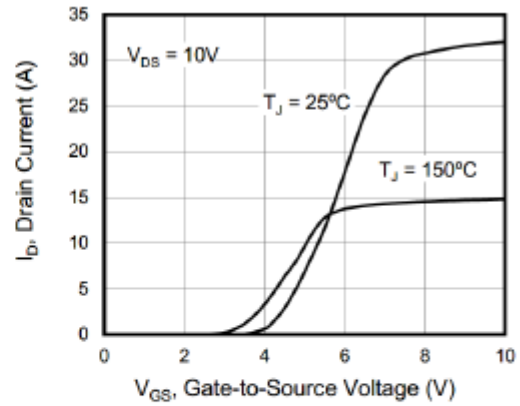


Figure 3. On-Resistance vs. Drain Current

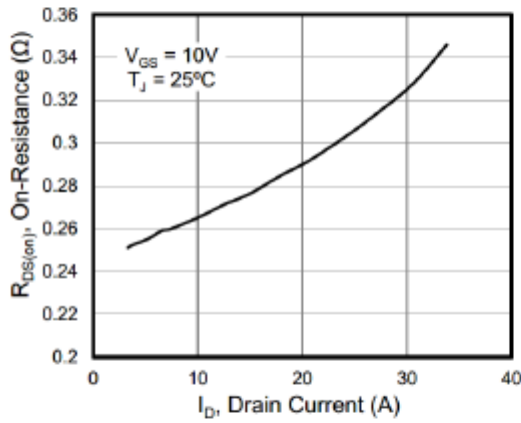


Figure 4. Capacitance

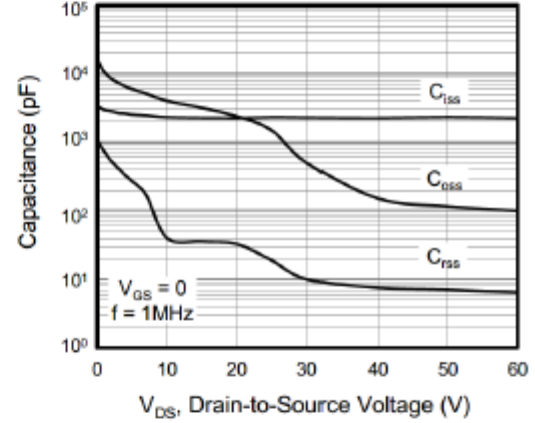


Figure 5. Gate Charge

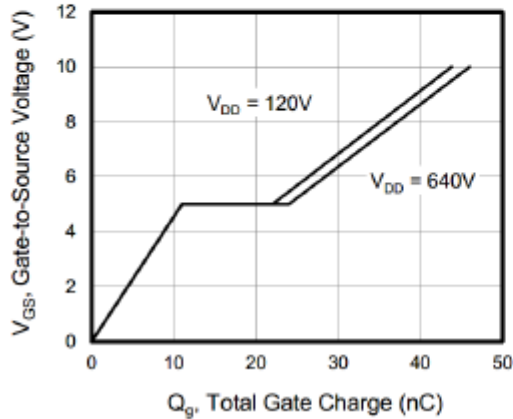


Figure 6. Body Diode Forward Voltage

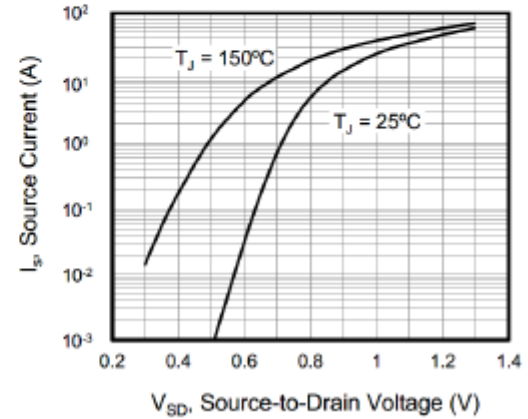


Figure 7. On-Resistance vs. Junction Temperature

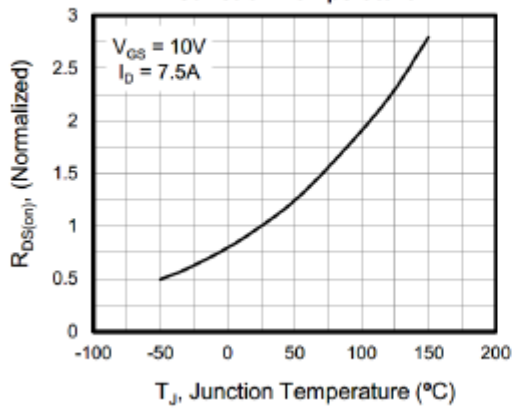
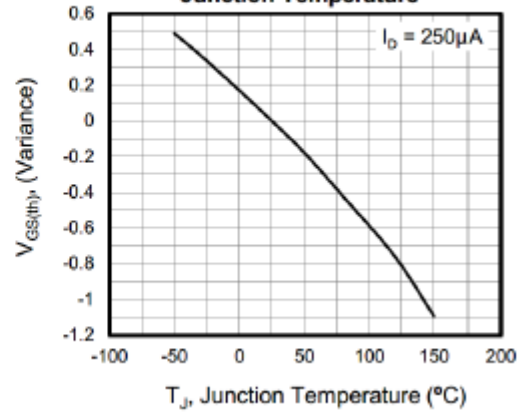
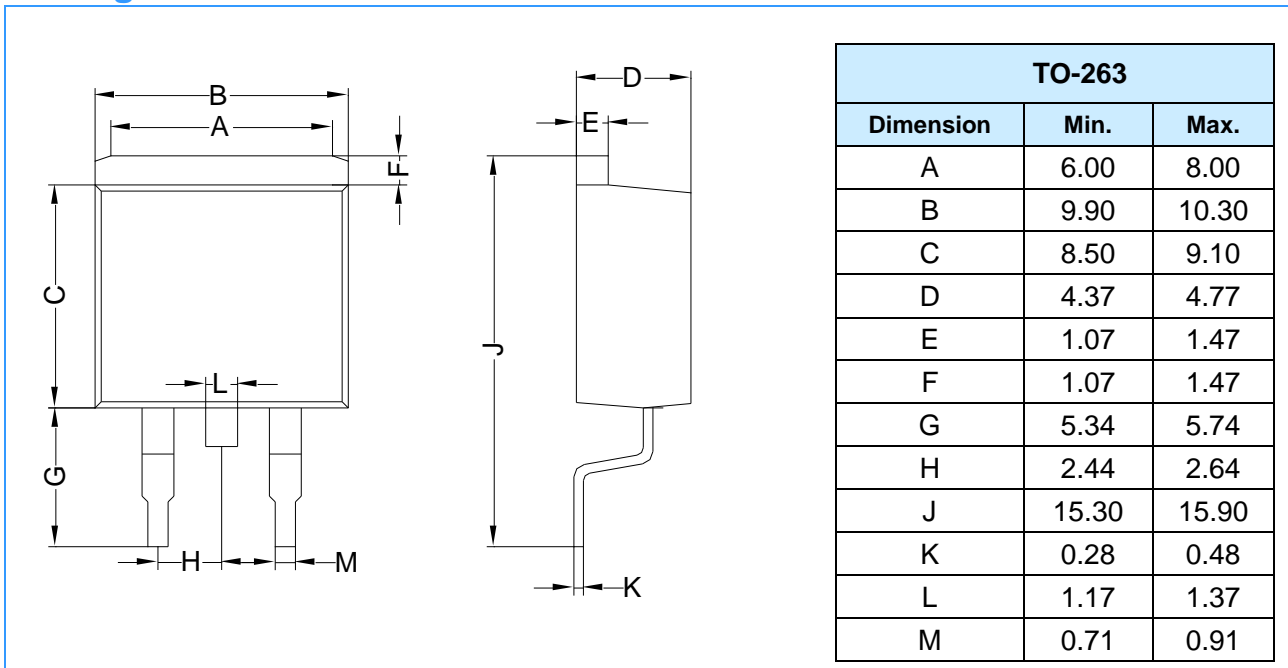


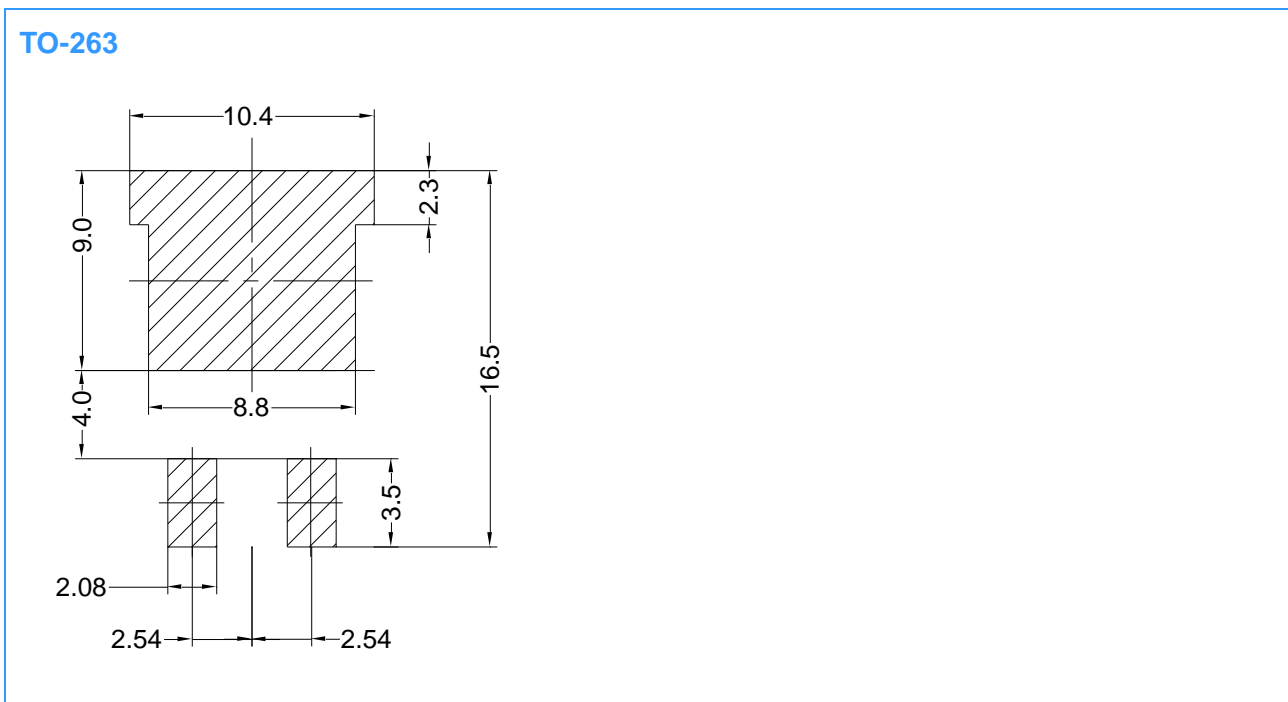
Figure 8. Threshold Voltage vs. Junction Temperature



**Package Outline Dimensions** (Unit: mm)



**Mounting Pad Layout** (Unit: mm)



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