

Features

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

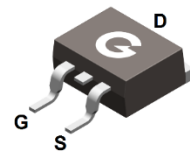
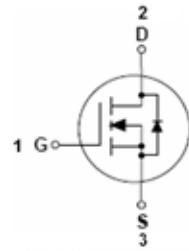
HF

APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (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
SJ90R350B	TO-263	50 pcs / Tube & 800 pcs / Tape & Reel	SJ90R350B

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	900	V
Gate-to-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	15	A
Pulsed Drain Current ^{*1}	I_{DM}	45	A
Single Pulse Avalanche Energy ^{*2}	E_{AS}	280	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_c = 25^\circ\text{C}$)	P_D	240	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.52	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	900	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 900V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} = 900V, V _{GS} = 0V, T _J =150°C	-	-	100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±30V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Static Drain-Source On-resistance *3	V _{GS} = 10V, I _D = 7.5A	-	-	0.365	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.5	-	4.5	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 50V f = 1.0MHz	-	2840	-	pF
C _{OSS}	Output Capacitance		-	220	-	
C _{RSS}	Reverse Transfer Capacitance		-	16	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 400V R _G = 25Ω I _D = 15A	-	49	-	ns
t _r	Turn-on Rise Time		-	42	-	
t _{d(OFF)}	Turn-Off Delay Time		-	166	-	
t _f	Turn-Off Fall Time		-	13	-	
Q _G	Total Gate-Charge	V _{DD} = 400V V _{GS} = 10V I _D = 15A	-	62	-	nC
Q _{GS}	Gate to Source Charge		-	15	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	23	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} = 15A, V _{GS} = 0V, T _J = 25°C	-	-	1.2	V
I _S	Diode Continuous Forward Current	T _C = 25°C	-	-	15	A
I _{SM}	Pulsed Source-Drain Current		-	-	45	A
t _{rr}	Reverse Recovery Time	I _S = I _F = 15A, V _R = 400 V	-	680	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt = 100 A/μs	-	9	-	μC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $I_{AS} = 7.5A, V_{DD} = 50V, R_G = 25\Omega$, 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

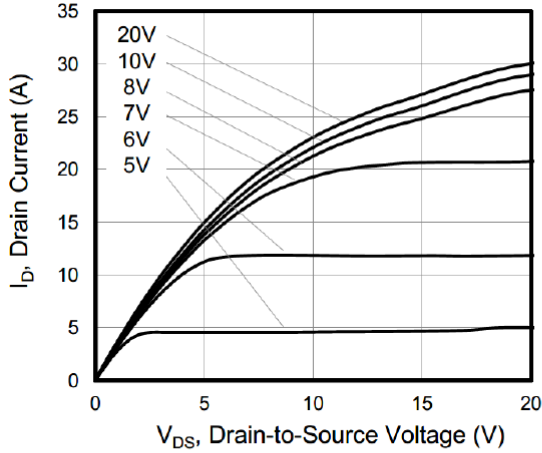


Figure 2. Transfer Characteristics

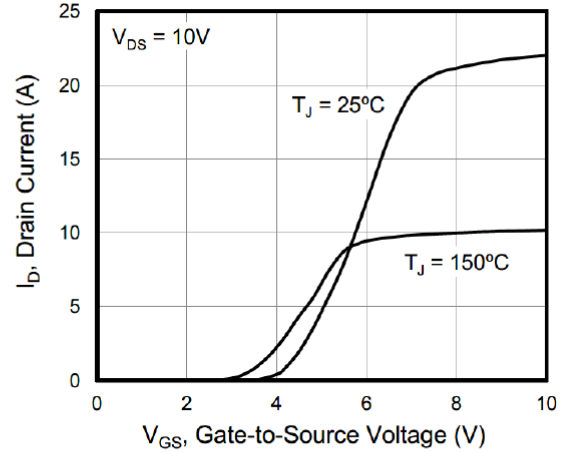


Figure 3. On-Resistance vs. Drain Current

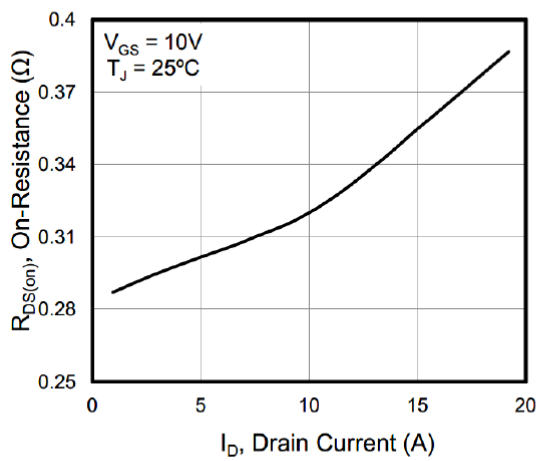


Figure 4. Capacitance

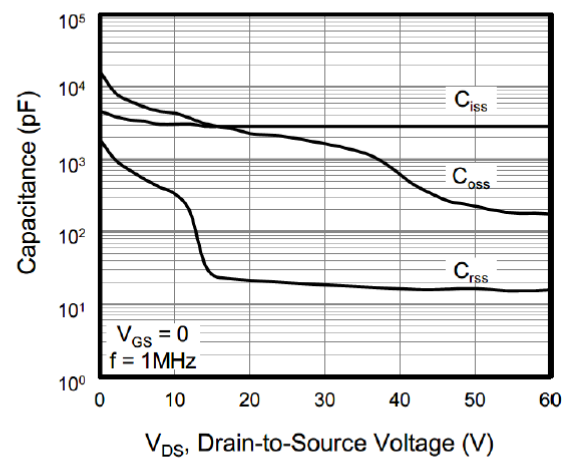


Figure 5. Gate Charge

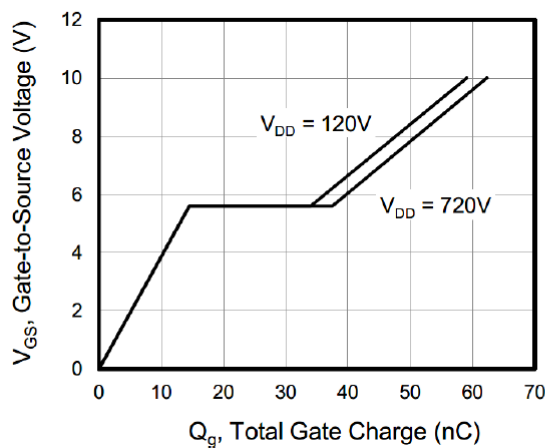


Figure 6. Body Diode Forward Voltage

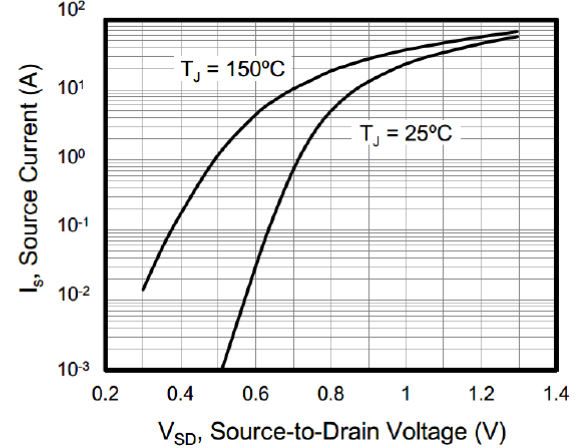


Figure 7. On-Resistance vs. Junction Temperature

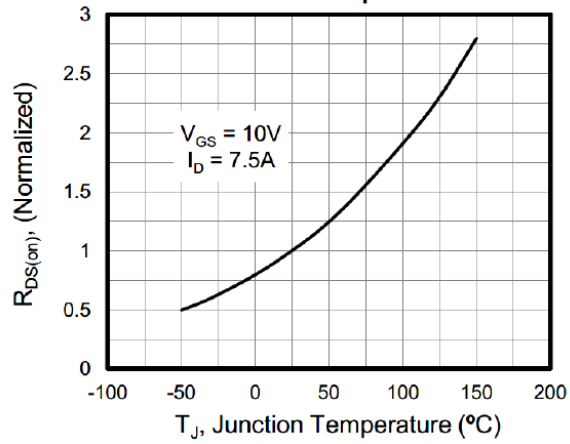
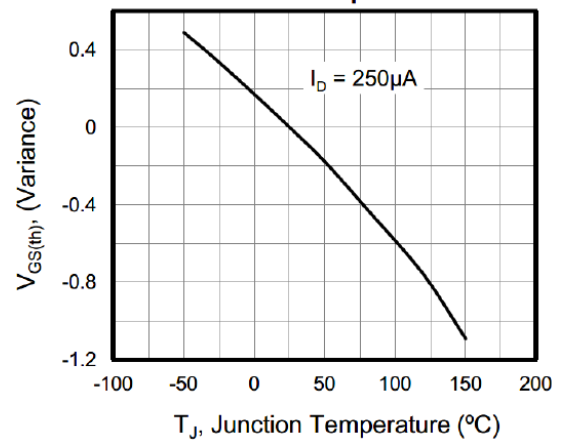
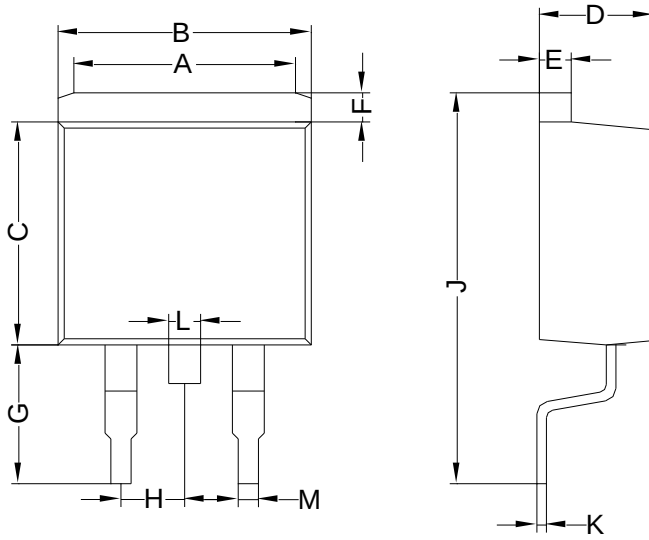


Figure 8. Threshold Voltage vs. Junction Temperature



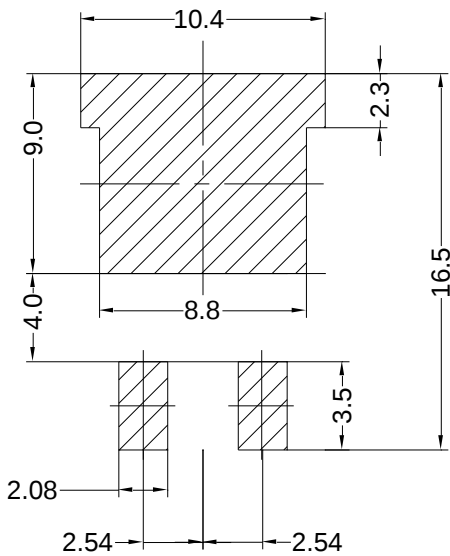
Package Outline Dimensions (Unit: mm)



TO-263		
Dimension	Min.	Max.
A	6.00	8.00
B	9.90	10.30
C	8.50	9.10
D	4.37	4.77
E	1.07	1.47
F	1.07	1.47
G	5.34	5.74
H	2.44	2.64
J	15.30	15.90
K	0.28	0.48
L	1.17	1.37
M	0.71	0.91

Mounting Pad Layout (Unit: mm)

TO-263



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