Super Junction Power MOSFET
SJ65R600D

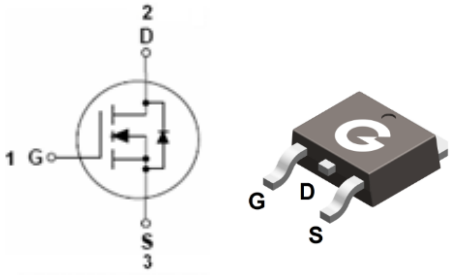
Features

- Fast switching speed
- Low gate charge
- Improved dv/dt capability

HF

Mechanical Data

- Case:TO-252
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-252

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
SJ65R600D	TO-252	80 pcs / Tube or 2500pcs / Tape & Reel	SJ65R600D

Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	650	V
Gate-to-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current(T_C = 25°C) *1	I_D	6.7	A
Continuous Drain Current(T_C = 100°C) *1	I_D	4.2	A
Pulsed Drain Current *1	I_{DM}	20	A
Single Pulse Avalanche Energy *2	E_{AS}	73	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation(T_C = 25°C)	P_D	27	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	80	°C/W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	4.61	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (@ T_J = 25℃ 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	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±1	μA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance *3	V_{GS} = 10V, I_D = 2A	-	-	0.6	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	-	4	V
Dynamic Characteristics*3						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 400V f = 1.0MHz	-	588	-	pF
C_{OSS}	Output Capacitance		-	17	-	
C_{RSS}	Reverse Transfer Capacitance		-	2.7	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 325V R_G = 25Ω I_D = 2.9A	-	23	-	ns
t_r	Turn-on Rise Time		-	18	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	77	-	
t_f	Turn-Off Fall Time		-	18	-	
Q_G	Total Gate-Charge	V_{DD} = 520V V_{GS} = 10V I_D = 2.9A	-	14	-	nC
Q_{GS}	Gate to Source Charge		-	2.6	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	4.5	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD} = 2.9A, V_{GS} = 0V, T_J = 25°C	-	-	1.3	V
I_S	Diode Continuous Forward Current	T_C = 25°C	-	-	6.7	A
I_{SM}	Pulsed Source-Drain Current		-	-	20	A
t_{rr}	Reverse Recovery Time	I_S = I_F = 2.9A, V_R = 400 V di/dt = 100 A/μs	-	250	-	ns
Q_{rr}	Reverse Recovery Charge		-	1.8	-	μC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_{AS} = 1.3A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 2%

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

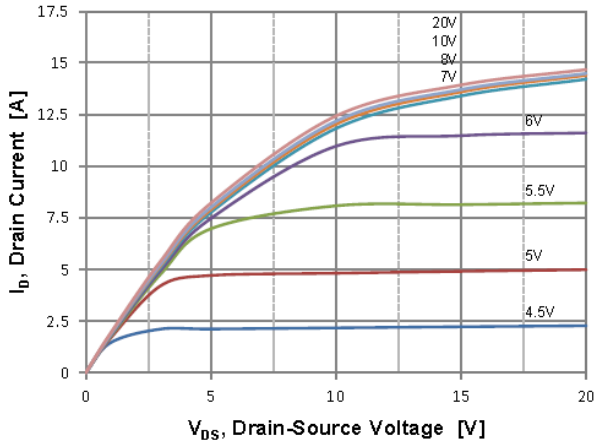


Figure 1. On Region Characteristics

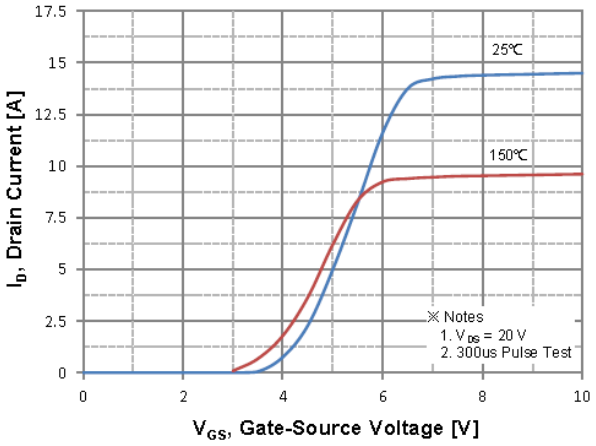


Figure 2. Transfer Characteristics

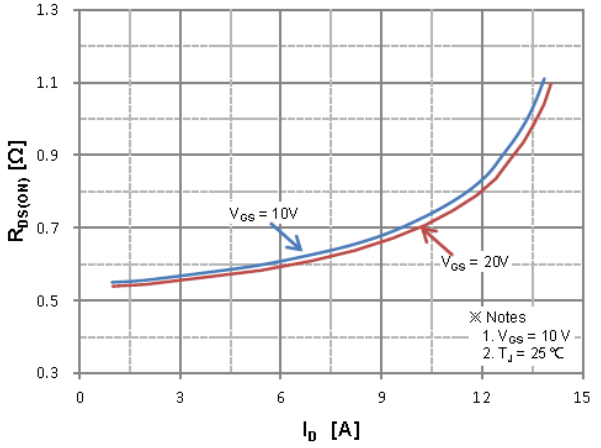


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

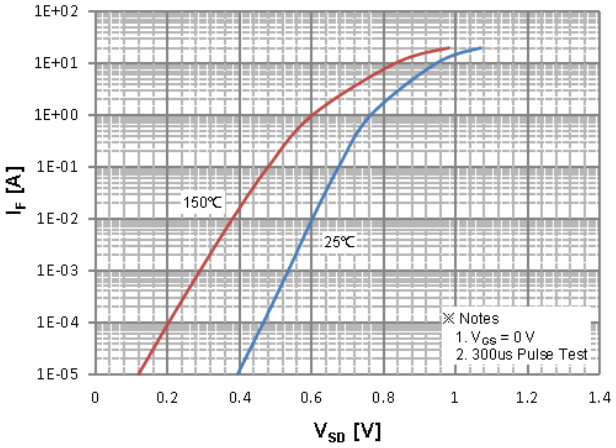


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

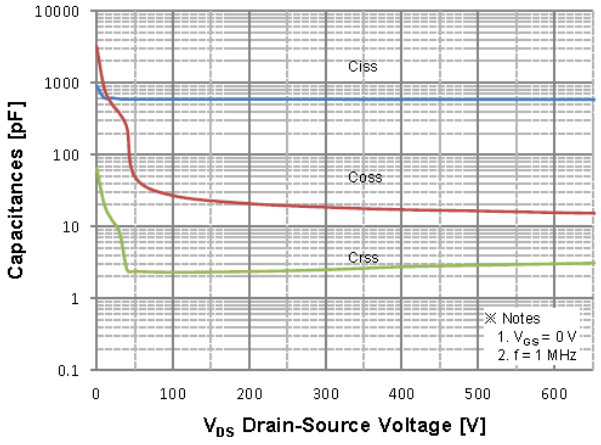


Figure 5. Capacitance Characteristics

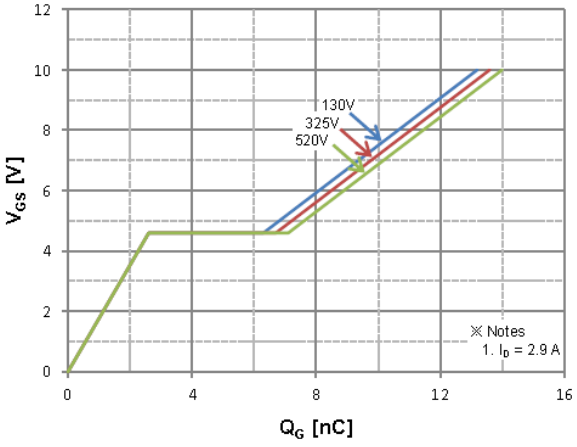


Figure 6. Gate Charge Characteristics

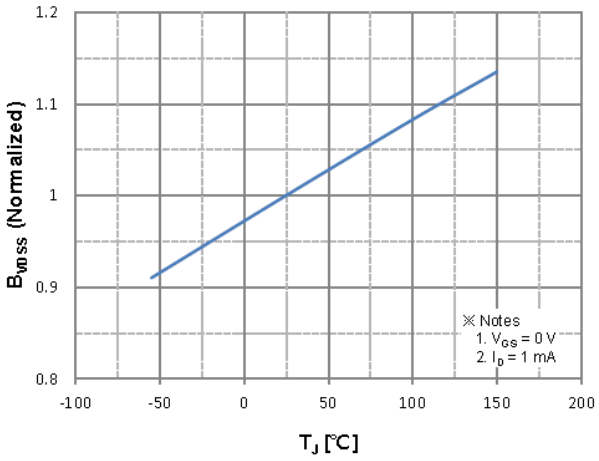


Figure 7. Breakdown Voltage Variation vs. Temperature

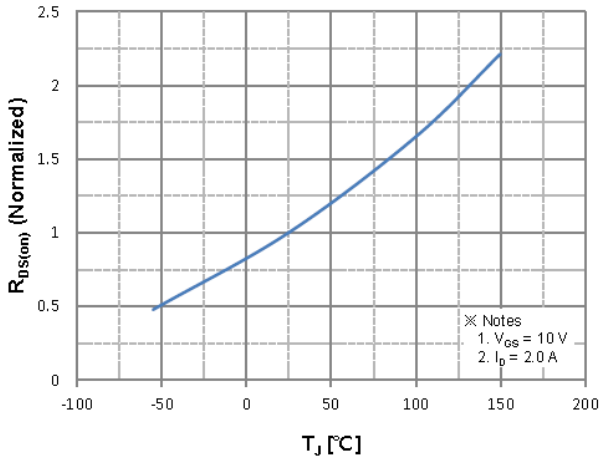


Figure 8. On-Resistance Variation vs. Temperature

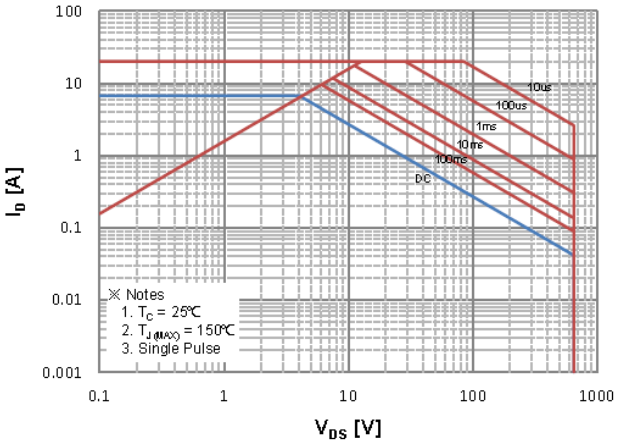


Figure 9. Maximum Safe Operating Area

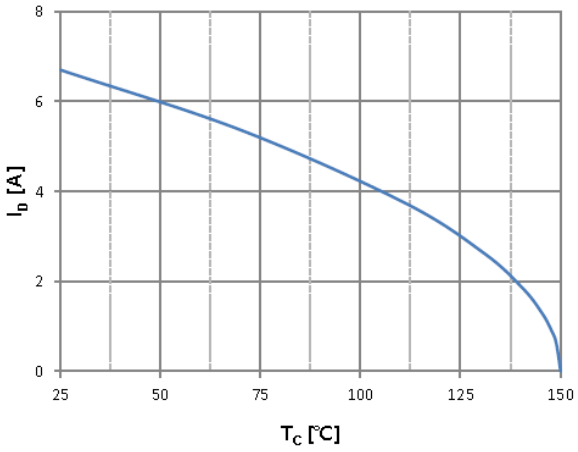
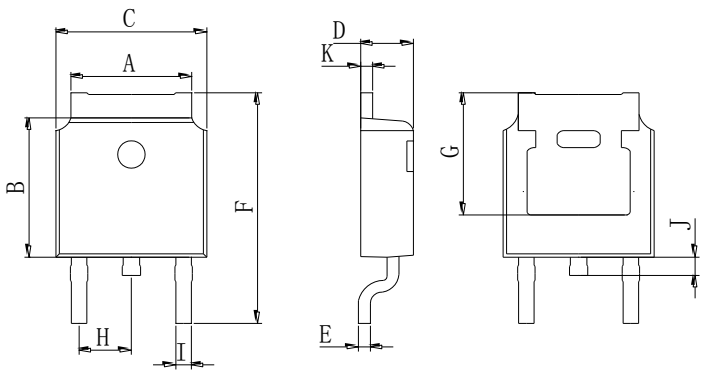


Figure 10. Maximum Drain Current vs. Case Temperature

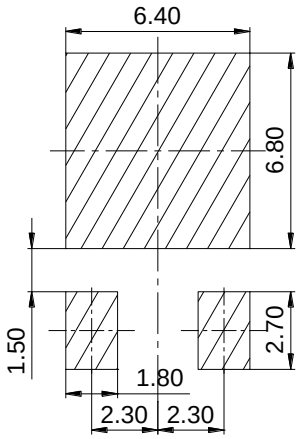
Package Outline Dimensions (Unit: mm)



TO-252		
Dimension	**Min.**	**Max.**
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	9.71	10.31
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	0.50	0.70
K	0.40	0.60

Mounting Pad Layout (Unit: mm)

TO-252



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