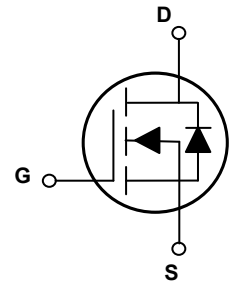


### Main Product Characteristics

$V_{(BR)DSS}$	600V
$R_{DS(ON)}$	0.57Ω (max.)
$I_D$	7A



TO-251



Schematic Diagram

### Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



### Description

The GSJG60R570 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supplies and a wide variety of other applications.

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

Parameter	Symbol	Parameter.	Unit
Drain-Source Voltage	$V_{DS}$	600	V
Gate-to-Source Voltage	$V_{GS}$	±30	V
Continuous Drain Current, @ Steady-State ( $T_C=25^\circ\text{C}$ )	$I_D$	7	A
Continuous Drain Current, @ Steady-State ( $T_C=100^\circ\text{C}$ )		4.4	A
Pulsed Drain Current	$I_{DM}$	28	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	60	W
		0.48	W/°C
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	248	mJ
Body Diode Reverse Voltage Slope <sup>2</sup>	dv/dt	50	V/ns
MOS dv/dt Reggedness <sup>3</sup>	dv/dt	100	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.0	°C/W
Junction-to-Case	$R_{\theta JC}$	2.08	°C/W
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to + 150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	600	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=600V, V_{GS}=0V$	-	-	200	nA
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
		$V_{DS}=0V, V_{GS}=-30V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3.5A, T_J=25^\circ\text{C}$	-	0.48	0.57	$\Omega$
		$V_{GS}=10V, I_D=3.5A, T_J=125^\circ\text{C}$	-	0.95	-	$\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=100V, f=1\text{MHz}$	-	602	-	pF
Output Capacitance	$C_{oss}$		-	25	-	
Reverse Transfer Capacitance	$C_{rss}$		-	0.8	-	
Total Gate Charge <sup>4,5</sup>	$Q_g$	$I_D=7A, V_{DD}=480V, V_{GS}=10V$	-	19	-	nC
Gate-to-Source Charge <sup>4,5</sup>	$Q_{gs}$		-	5.1	-	
Gate-to-Drain ("Miller") Charge <sup>4,5</sup>	$Q_{gd}$		-	8.6	-	
Turn-On Delay Time <sup>4,5</sup>	$t_{d(on)}$	$V_{DD}=300V, V_{GS}=10V, R_G=25\Omega, I_D=7A$	-	20	-	nS
Rise Time <sup>4,5</sup>	$t_r$		-	40	-	
Turn-Off Delay Time <sup>4,5</sup>	$t_{d(off)}$		-	91	-	
Fall Time <sup>4,5</sup>	$t_f$		-	38	-	
Gate Resistance	$R_g$	$f=1\text{MHz}$	-	5.0	-	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	$I_S$	$T_C=25^\circ\text{C}$ , MOSFET symbol showing the integral reverse p-n junction diode.	-	-	7	A
Source Pulse Current	$I_{SM}$		-	-	28	A
Diode Forward Voltage	$V_{SD}$	$I_S=7A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time <sup>3</sup>	$T_{rr}$	$I_F=7A, V_{GS}=0V, dI_F/dt=100A/\mu s$	-	240	-	nS
Reverse Recovery Charge <sup>3</sup>	$Q_{rr}$		-	2.4	-	$\mu\text{C}$

Note:

- $L=79\text{mH}, I_{AS}=2.3A, V_{DD}=100V$ , starting temperature  $T_J=25^\circ\text{C}$ .
- $V_{DS}=0-400V, I_{SD}\leq 20A, T_J=25^\circ\text{C}$ .
- $V_{DS}=0-480V$ .
- Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- Essentially independent of operating temperature.

## Typical Electrical and Thermal Characteristic Curves

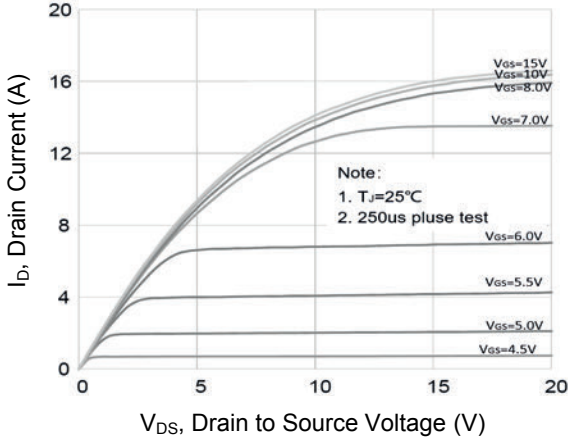


Figure 1. Typical Output Characteristics

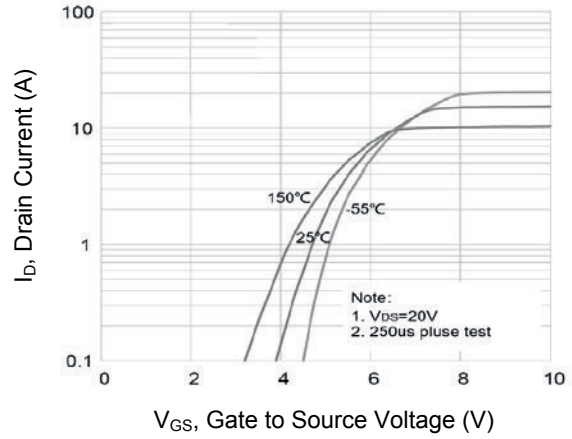


Figure 2. Transfer Characteristics

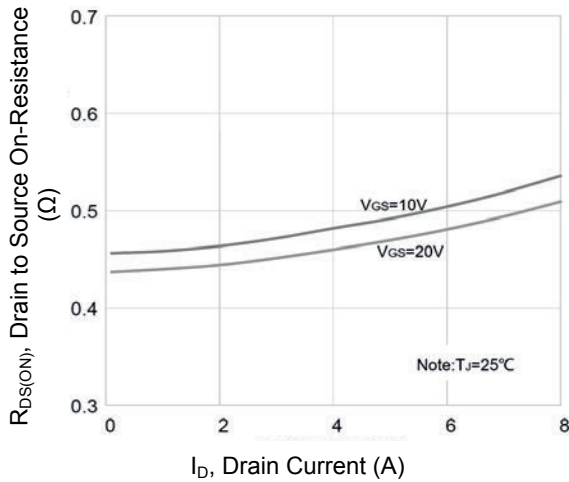


Figure 3.  $R_{DS(ON)}$  Vs. Drain Current

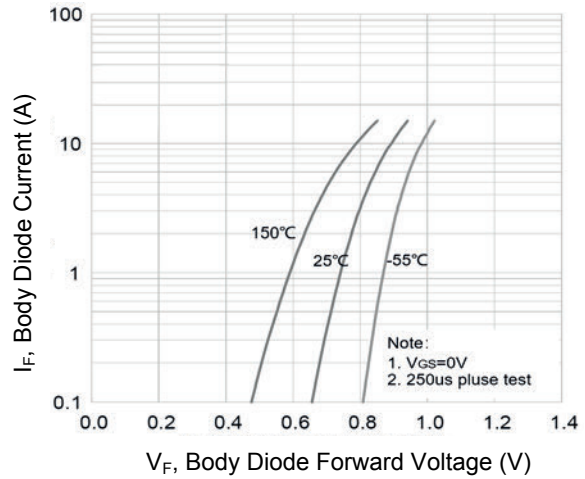


Figure 4. Body Diode Characteristics

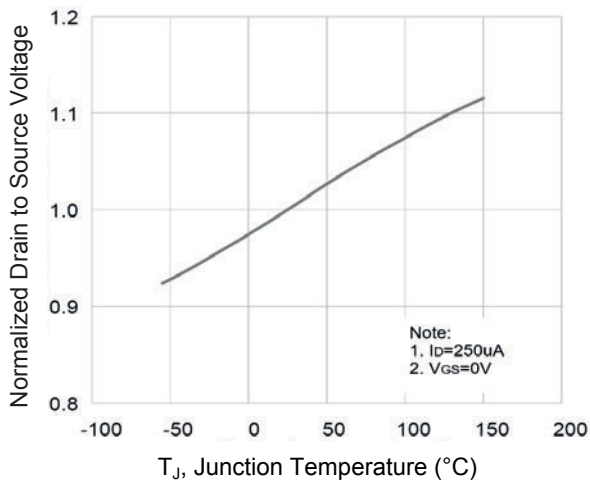


Figure 5. Normalized  $BV_{DSS}$  Vs.  $T_J$

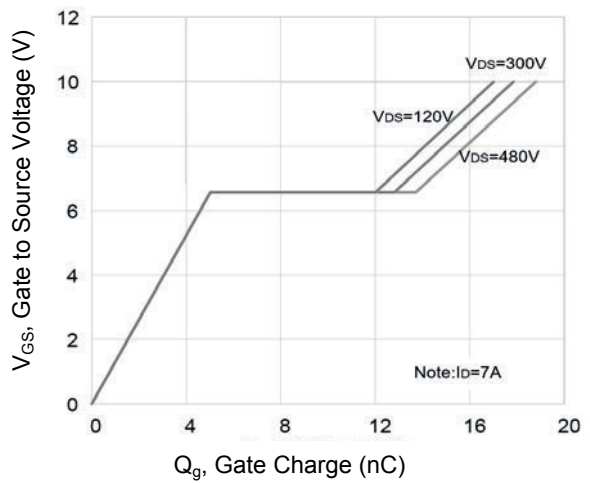
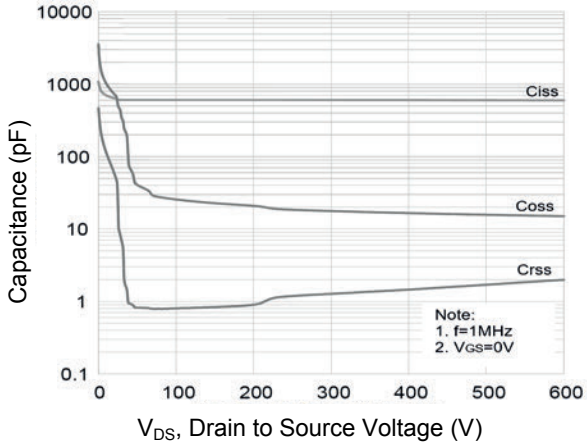
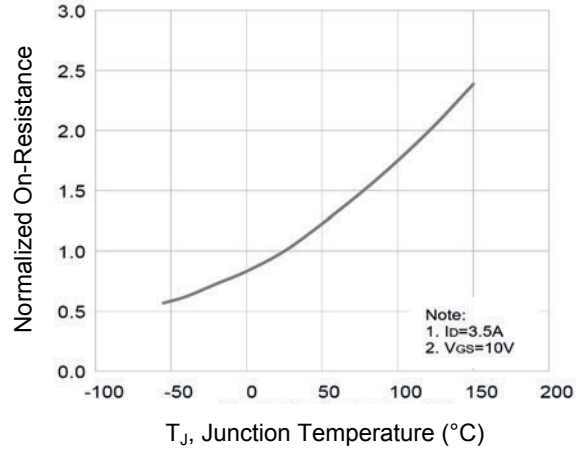


Figure 6. Gate Charge

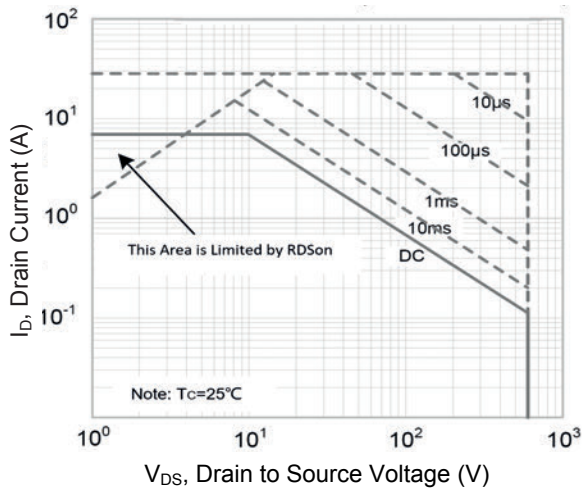
**Typical Electrical and Thermal Characteristic Curves**



**Figure 7. Capacitance Characteristics**

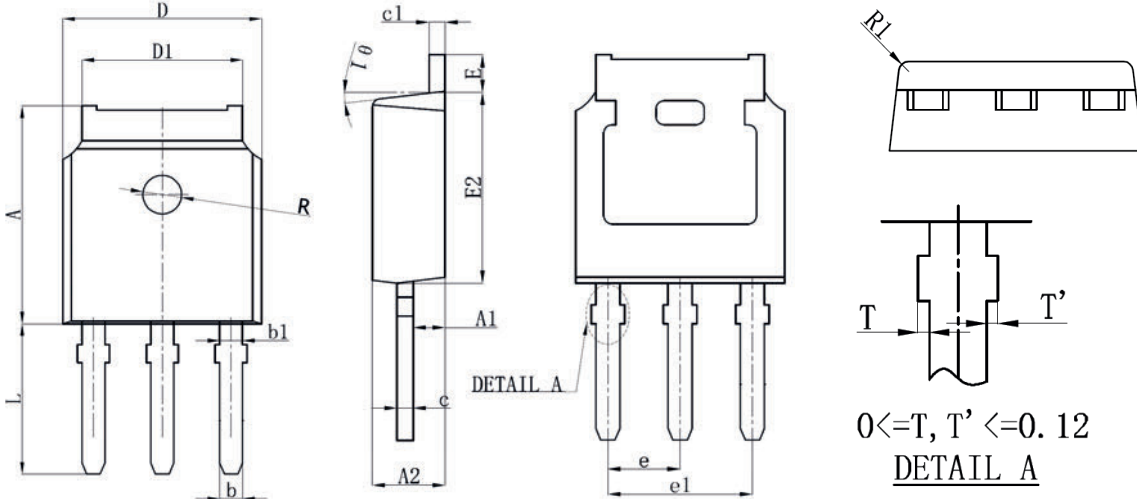


**Figure 8. Normalized  $R_{DS(ON)}$  Vs.  $T_J$**



**Figure 9. Safe Operation Area**

## Package Outline Dimensions (TO-251)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	7.05	7.15	0.278	0.281
A1	0.96	1.06	0.038	0.042
A2	2.25	2.35	0.089	0.093
b	0.760 REF		0.030 REF	
b1	1.000 REF		0.039 REF	
c	0.508 REF		0.020 REF	
c1	0.508 REF		0.020 REF	
D	6.55	6.65	0.258	0.262
D1	5.22	5.42	0.206	0.213
E	0.95	1.05	0.037	0.041
E2	6.05	6.15	0.238	0.242
e	2.286 BSC		0.090 BSC	
e1	4.572 REF		0.180 REF	
L	4.80	5.20	0.189	0.205
theta	7° REF		7° REF	
R	1.300 REF		0.051 REF	
R1	0.250 REF		0.010 REF	