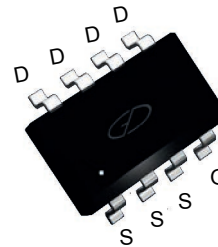
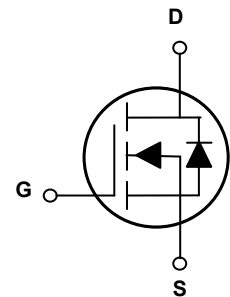


Main Product Characteristics

BV_{DSS}	150V
$R_{DS(ON)}$	68mΩ (max)
I_D	4.6A



SOP-8



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 GSGQ5R515 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 ($T_A=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	4.6	A
Drain Current-Continuous ($T_A=100^{\circ}C$)		3.3	
Pulsed Drain Current	I_{DM}	18.4	A
Maximum Power Dissipation	P_D	3	W
Single Pulse Avalanche Energy ¹	E_{AS}	30	mJ
Thermal Resistance, Junction-to-Ambient ²	$R_{\theta JA}$	42	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	150	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3	1.9	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=2A$	-	59	68	m Ω
		$V_{GS}=4.5V, I_D=2A$	-	72	95	
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=2A$	-	7	-	S
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=75V, V_{GS}=0V, F=1.0MHz$	-	799	-	pF
Output Capacitance	C_{oss}		-	74.4	-	
Reverse Transfer Capacitance	C_{rss}		-	11.1	-	
Turn-on Delay Time ³	$t_{d(on)}$	$V_{DD}=75V, R_L=7.5\Omega, V_{GS}=10V, R_g=3\Omega$	-	10.5	-	nS
Turn-on Rise Time ³	t_r		-	6	-	
Turn-Off Delay Time ³	$t_{d(off)}$		-	14.5	-	
Turn-Off Fall Time ³	t_f		-	3.5	-	
Total Gate Charge ³	Q_g	$V_{DS}=75V, I_D=2A, V_{GS}=10V$	-	15	-	nC
Gate-Source Charge ³	Q_{gs}		-	4.5	-	
Gate-Drain Charge ³	Q_{gd}		-	3	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=2A$	-	-	1.2	V
Diode Forward Current	I_S	-	-	-	4.6	A
Reverse Recovery Time	T_{rr}	$T_J=25^\circ\text{C}, I_F=I_S$ $di/dt=100A/\mu s$	-	29.5	-	nS
Reverse Recovery Charge	Q_{rr}		-	132	-	nC

Notes:

1. EAS condition: $T_J=25^\circ\text{C}, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega$.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design.
3. Guaranteed by design, not subject to production.
4. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)}=150^\circ\text{C}$. The SOA curve provides a single pulse rating.

Typical Electrical and Thermal Characteristic Curves

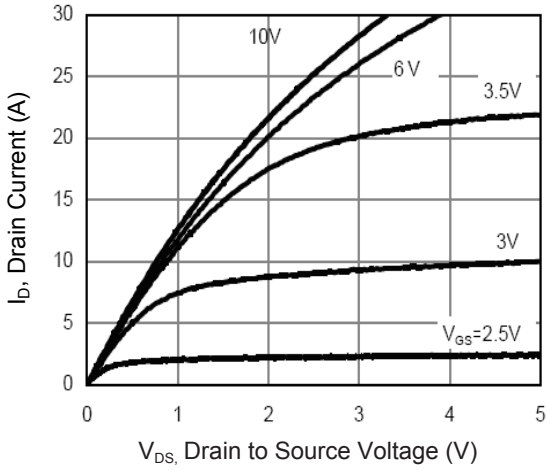


Figure 1. Output Characteristics

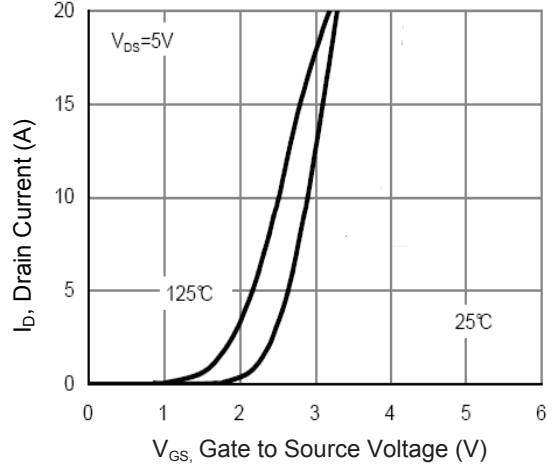


Figure 2. Transfer Characteristics

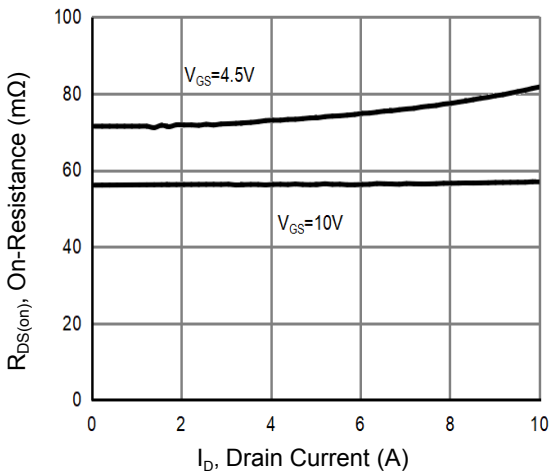


Figure 3. $R_{DS(ON)}$ vs. Drain Current

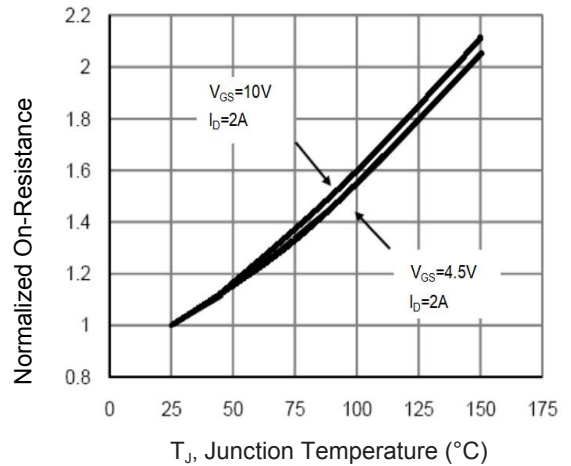


Figure 4. $R_{DS(ON)}$ vs. Junction Temperature

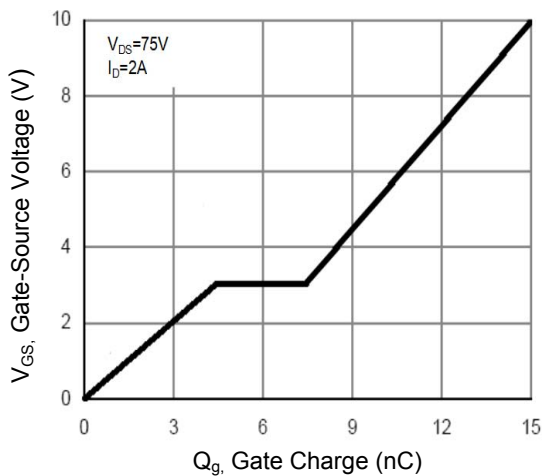


Figure 5. Gate Charge

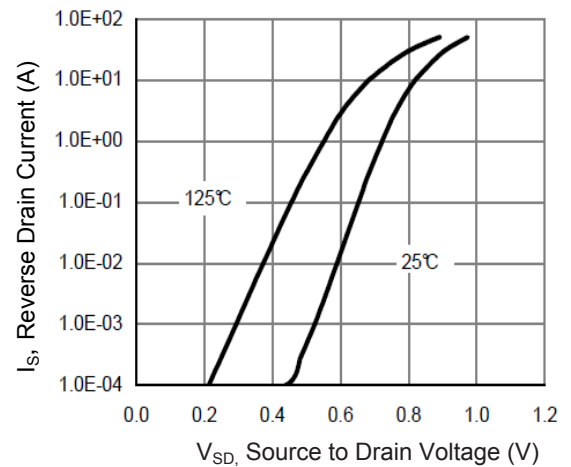


Figure 6. Source-Drain Diode Forward Voltage

Typical Electrical and Thermal Characteristic Curves

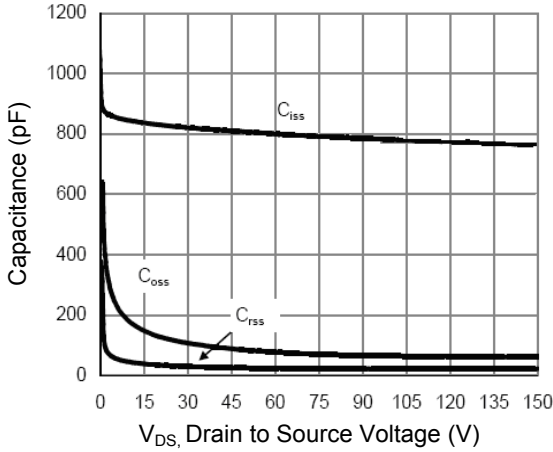


Figure 7. Capacitance vs. V_{DS}

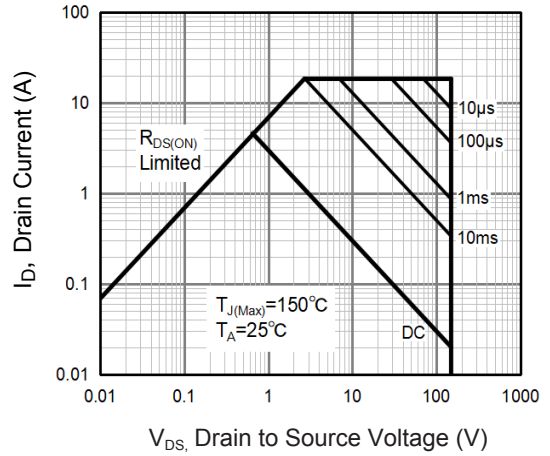


Figure 8. Safe Operating Area

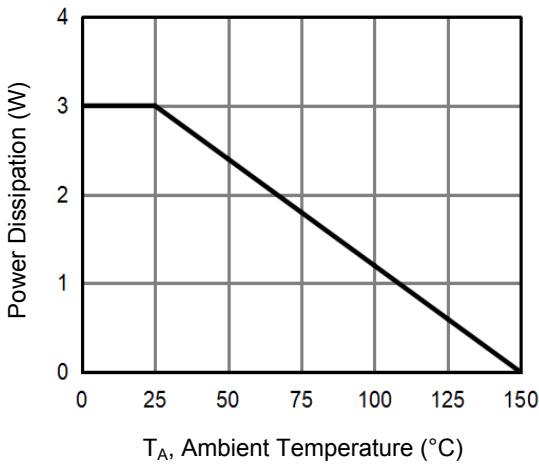


Figure 9. Power De-rating

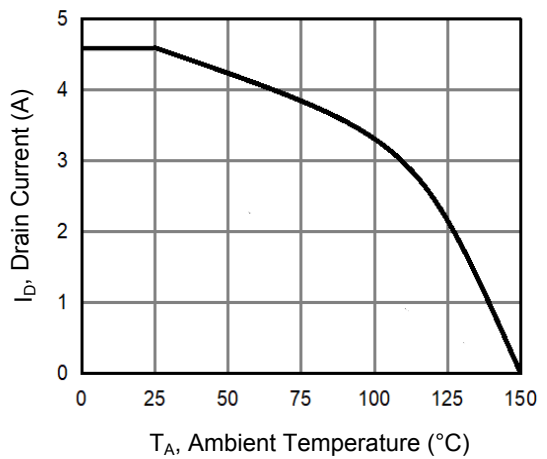


Figure 10. Current De-rating

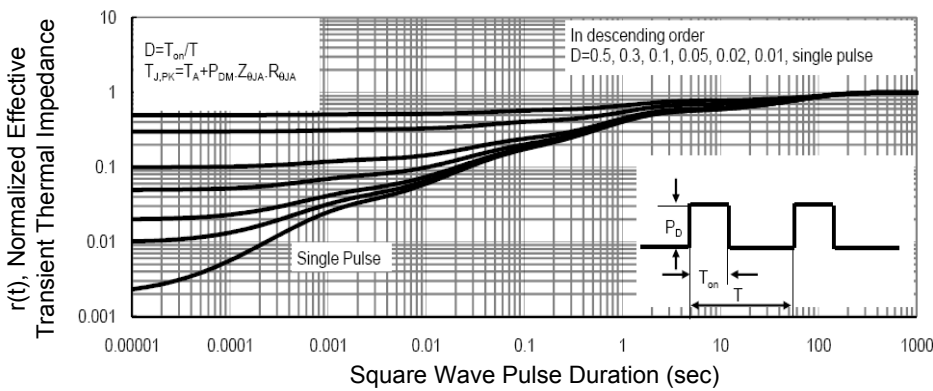
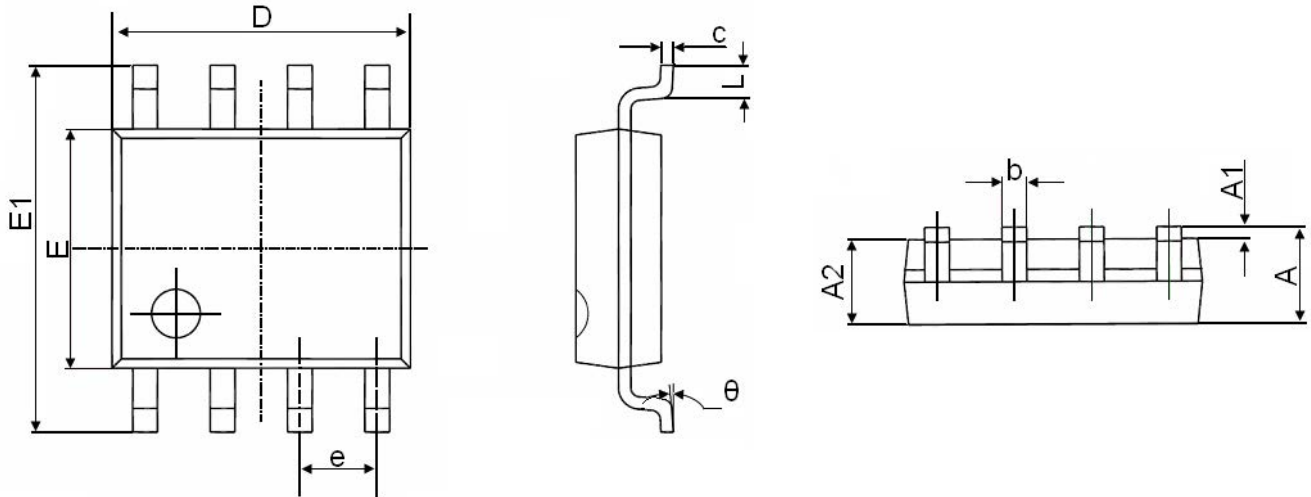


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Order Information

Device	Package	Carrier	Quantity	HSF Status
GSGQ5R515	SOP-8	Tape & Reel	4,000pcs /Reel	RoHS Compliant