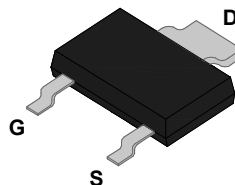
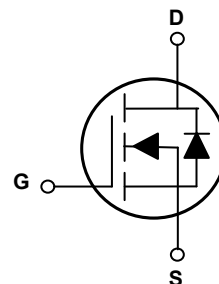


Main Product Characteristics

$V_{(BR)DSS}$	650V
$R_{DS(ON)}$	0.64Ω (Max.)
I_D	8A



SOT-223-2L



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 GSGL65R640 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°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-to-Source Voltage	V_{GS}	±30	V
Continuous Drain Current, @ Steady-State (T _C =25°C)	I_D	8	A
Continuous Drain Current, @ Steady-State (T _C =100°C)		4.9	A
Pulsed Drain Current	I_{DM}	32	A
Power Dissipation (T _C =25°C)	P_D	7.4	W
		0.06	W/°C
Single Pulse Avalanche Energy ¹	E_{AS}	221	mJ
Body Diode Reverse Voltage Slope ²	dv/dt	50	V/ns
MOS dv/dt Ruggedness ³	dv/dt	100	V/ns
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	16.9	°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
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	650	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=650V, V_{GS}=0V$	-	-	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3.5A, T_J=25^\circ\text{C}$	-	0.54	0.64	Ω
		$V_{GS}=10V, I_D=3.5A, T_J=125^\circ\text{C}$	-	1.09	-	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=100V, f=1\text{MHz}$	-	605	-	pF
Output Capacitance	C_{oss}		-	25	-	
Reverse Transfer Capacitance	C_{rss}		-	0.8	-	
Total Gate Charge ^{4,5}	Q_g	$I_D=7A, V_{DD}=520V, V_{GS}=10V$	-	20	-	nC
Gate-to-Source Charge ^{4,5}	Q_{gs}		-	5.2	-	
Gate-to-Drain ("Miller") Charge ^{4,5}	Q_{gd}		-	8.8	-	
Turn-On Delay Time ^{4,5}	$t_{d(on)}$	$V_{DD}=325V, V_{GS}=10V, R_g=25\Omega, I_D=7A$	-	21	-	nS
Rise Time ^{4,5}	t_r		-	39	-	
Turn-Off Delay Time ^{4,5}	$t_{d(off)}$		-	90	-	
Fall Time ^{4,5}	t_f		-	36	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	4.7	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	$T_C=25^\circ\text{C}$, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	8	A
Source Pulse Current	I_{SM}		-	-	32	A
Diode Forward Voltage	V_{SD}	$I_S=7A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time ³	t_{rr}	$I_F=7A, V_{GS}=0V, dI_F/dt=100A/\mu s$	-	239	-	nS
Reverse Recovery Charge ³	Q_{rr}		-	2.5	-	μC

Notes:

1. $L=79\text{mH}$, $I_{AS}=2.2A$, $V_{DD}=100V$, starting temperature $T_J=25^\circ\text{C}$.
2. $V_{DS}=0-400V$, $I_{SD} \leq 20A$, $T_J=25^\circ\text{C}$.
3. $V_{DS}=0-480V$.
4. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

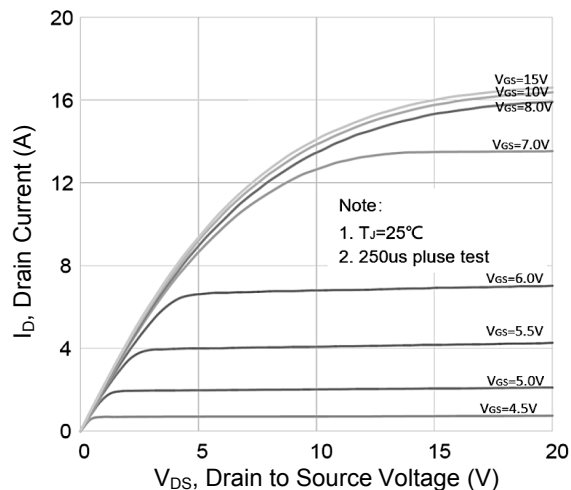


Figure 1. Typical Output Characteristics

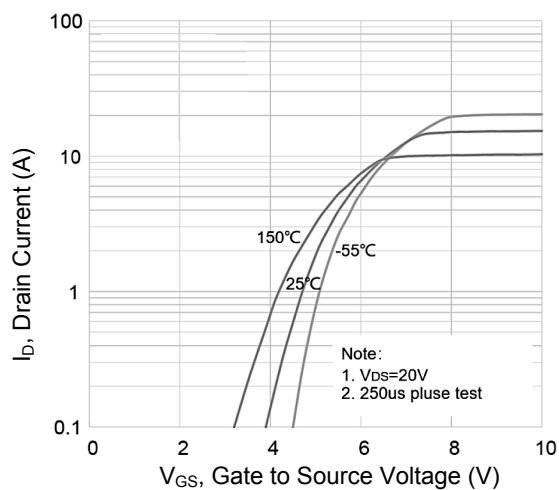


Figure 2. Transfer Characteristics

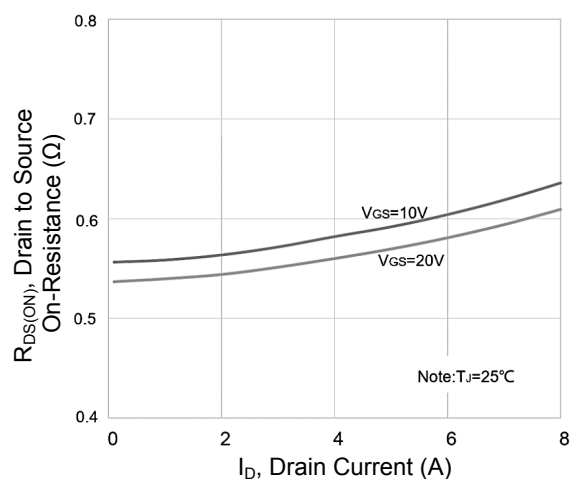


Figure 3. $R_{DS(ON)}$ vs. Drain Current

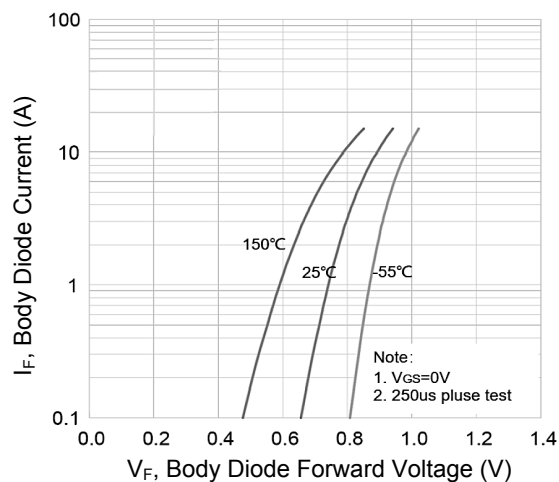


Figure 4. Body Diode Characteristic

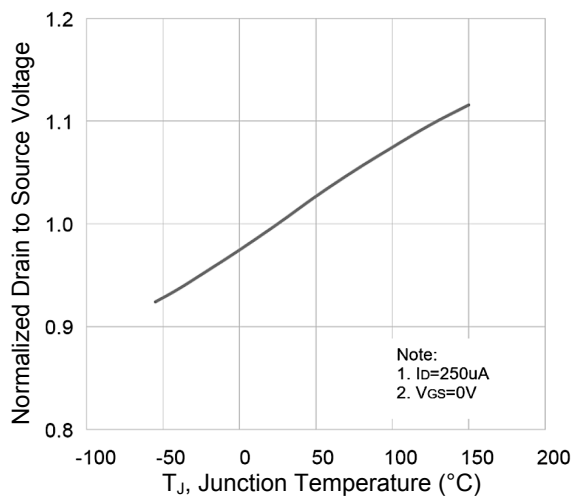


Figure 5. Normalized BV_{DSS} vs. T_J

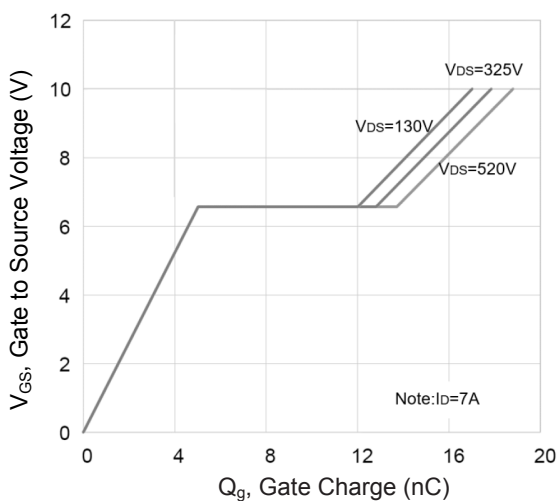


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

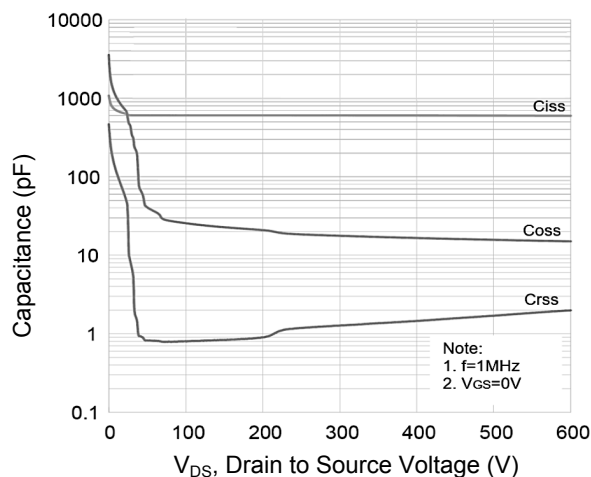


Figure 7. Capacitance Characteristic

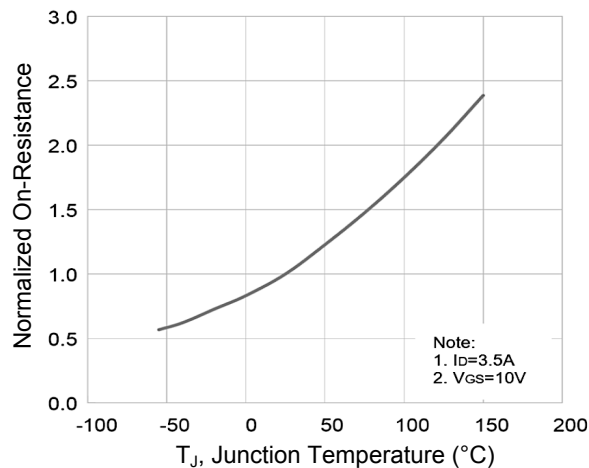


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

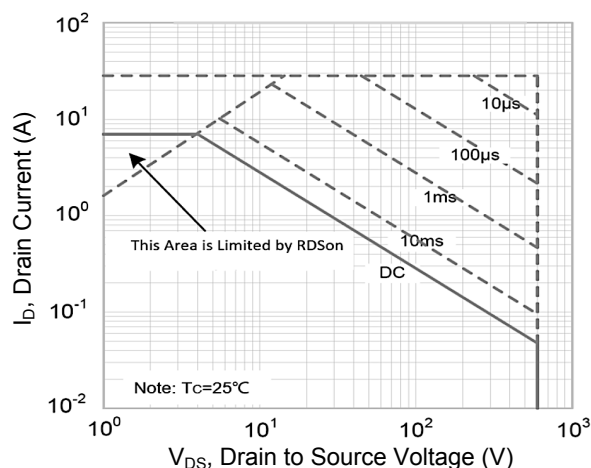
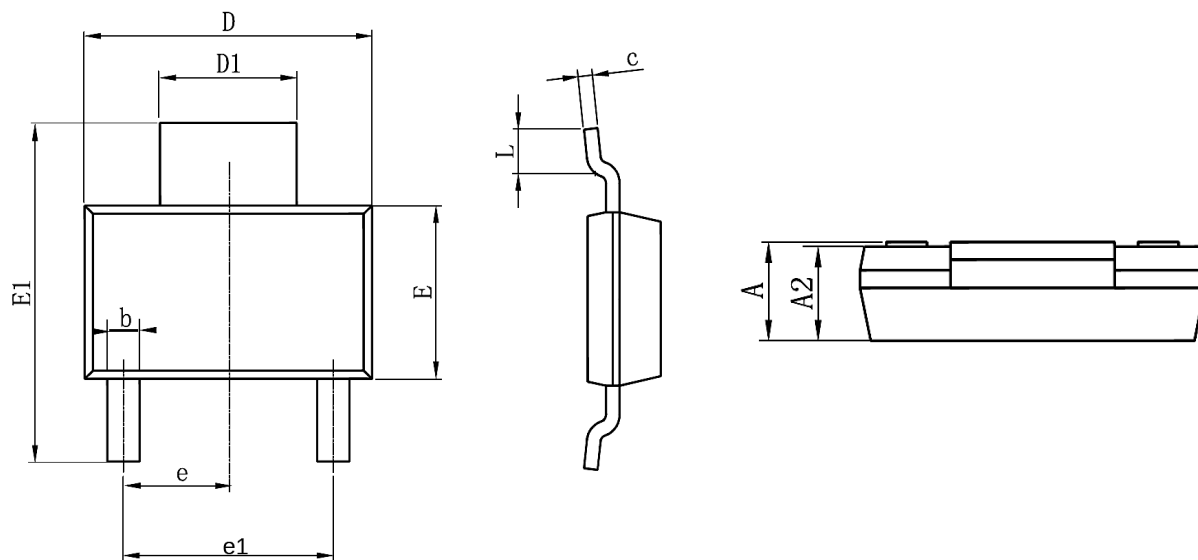


Figure 9. Safe Operation Area

Package Outline Dimensions (SOT-223-2L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.50	1.80	0.059	0.071
A2	1.45	1.80	0.057	0.071
b	0.60	0.84	0.024	0.033
c	0.20	0.35	0.008	0.014
D	6.20	6.70	0.244	0.264
D1	2.90	3.10	0.114	0.122
E	3.30	3.70	0.130	0.146
E1	6.70	7.30	0.264	0.287
e	2.30 TYP		0.091 TYP	
e1	4.40	4.70	0.173	0.185
L	0.70	1.10	0.028	0.043

Order Information

Device	Package	Marking	Packaging	SPQ
GSGL65R640	SOT-223-2L	L65R640	Tape & Reel	3,000 Pcs / Reel