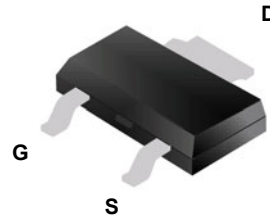
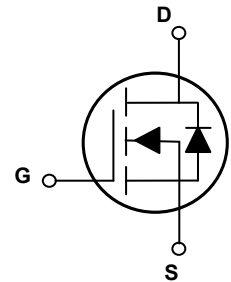


### Main Product Characteristics

$V_{(BR)DSS}$	800V
$R_{DS(ON)}$	1.3Ω (Max.)
$I_D$	4A



SOT-223



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 GSJL80R1K3 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	$V_{DS}$	800	V
Gate-to-Source Voltage	$V_{GS}$	±30	V
Continuous Drain Current, @ Steady-State ( $T_C=25^\circ\text{C}$ )	$I_D$	4	A
Continuous Drain Current, @ Steady-State ( $T_C=100^\circ\text{C}$ )		2.5	A
Pulsed Drain Current	$I_{DM}$	16	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	56	W
		0.45	W/°C
Single Pulse Avalanche Energy <sup>1</sup>	$E_{AS}$	210	mJ
Body Diode Reverse Voltage Slope <sup>2</sup>	dv/dt	48	V/ns
MOS dv/dt Ruggedness <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	$R_{\theta JC}$	2.23	°C/W
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to + 150	°C

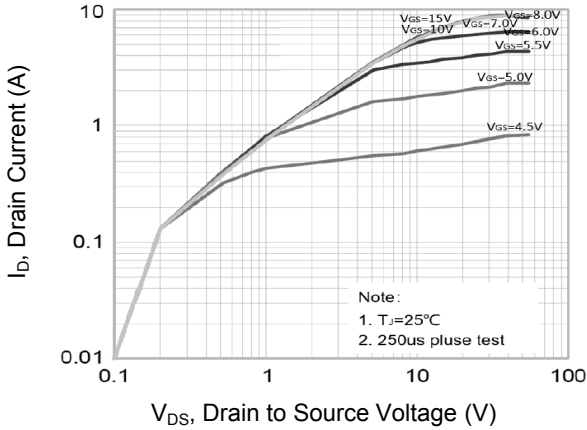
### Electrical Characteristics ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	800	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=800V, V_{GS}=0V$	-	-	1	$\mu A$
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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=2.0A$	-	1.1	1.3	$\Omega$
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	$C_{iss}$	$V_{GS}=0V, V_{DS}=100V, f=1MHz$	-	352	-	pF
Output Capacitance	$C_{oss}$		-	19	-	
Reverse Transfer Capacitance	$C_{rss}$		-	1.9	-	
Total Gate Charge <sup>4,5</sup>	$Q_g$	$I_D=4A, V_{DD}=640V, V_{GS}=10V$	-	19.2	-	nC
Gate-to-Source Charge <sup>4,5</sup>	$Q_{gs}$		-	3.18	-	
Gate-to-Drain ("Miller") Charge <sup>4,5</sup>	$Q_{gd}$		-	11.5	-	
Turn-On Delay Time <sup>4,5</sup>	$t_{d(on)}$	$V_{DD}=400V, V_{GS}=10V, R_G=24\Omega, I_D=4A$	-	9.68	-	nS
Rise Time <sup>4,5</sup>	$t_r$		-	26.6	-	
Turn-Off Delay Time <sup>4,5</sup>	$t_{d(off)}$		-	58.82	-	
Fall Time <sup>4,5</sup>	$t_f$		-	25.5	-	
Gate Resistance	$R_g$	$f=1MHz$	-	6.8	-	$\Omega$
<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.	-	-	4	A
Source Pulse Current	$I_{SM}$		-	-	16	A
Diode Forward Voltage	$V_{SD}$	$I_S=4A, V_{GS}=0V$	-	1.1	1.4	V
Reverse Recovery Time <sup>2</sup>	$T_{rr}$	$I_F=4A, V_{DD}=50V, di_F/dt=100A/\mu s$	-	370	-	nS
Reverse Recovery Charge <sup>2</sup>	$Q_{rr}$		-	2.6	-	$\mu C$

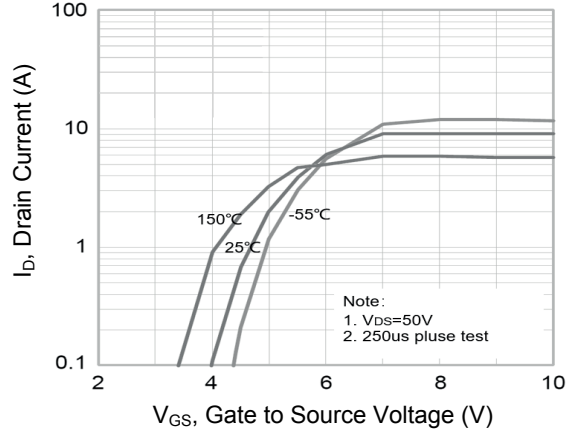
Notes:

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

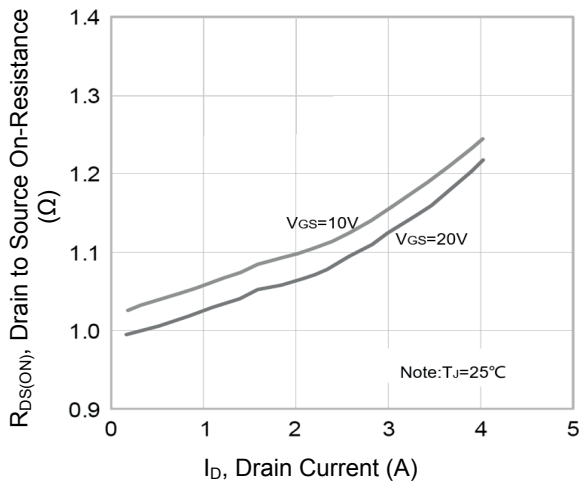
### Typical Electrical and Thermal Characteristic Curves



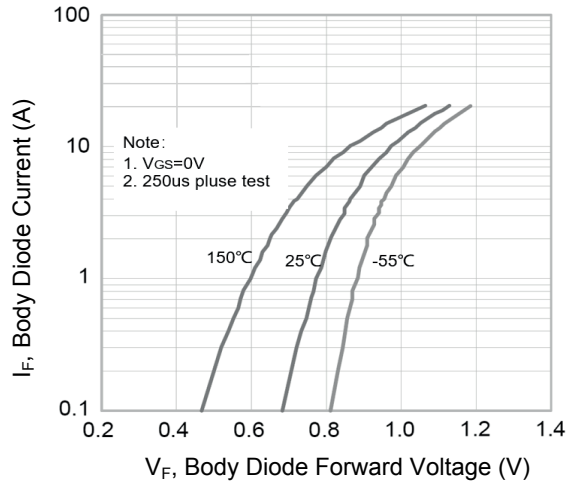
**Figure 1. Typical Output Characteristics**



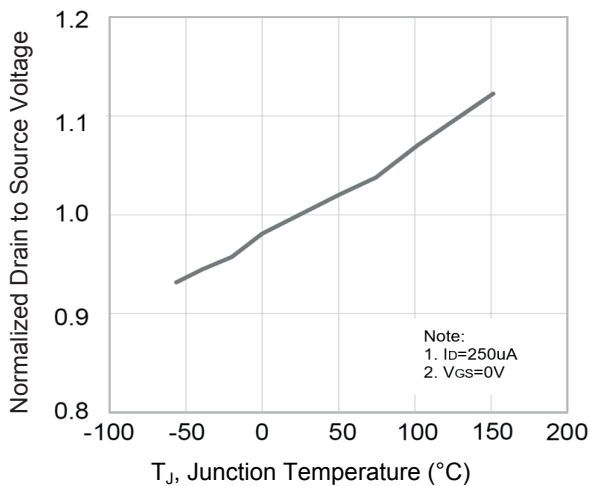
**Figure 2. Transfer Characteristics**



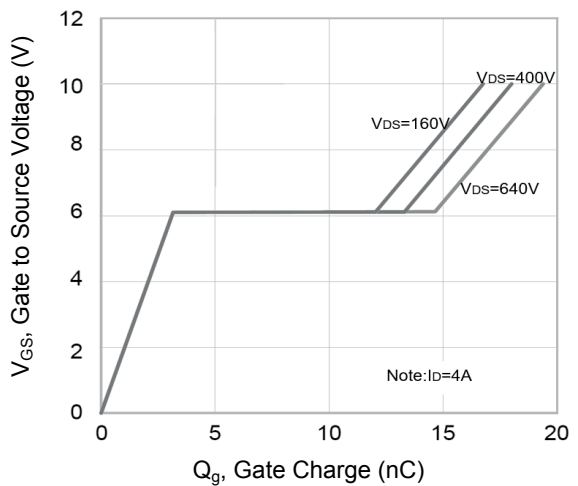
**Figure 3.  $R_{DS(ON)}$  vs. Drain Current**



**Figure 4. Body Diode Characteristics**

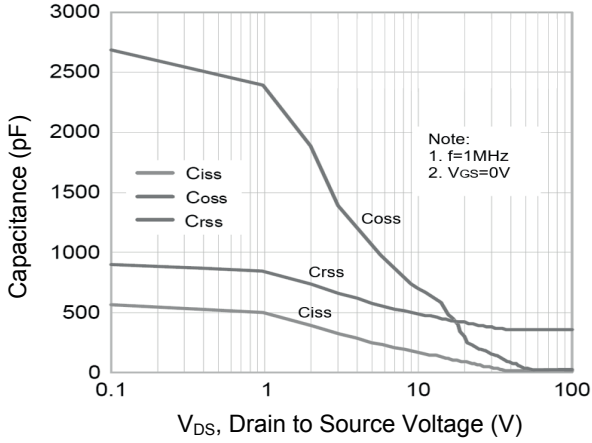


**Figure 5. Normalized  $BV_{DSS}$  vs.  $T_J$**

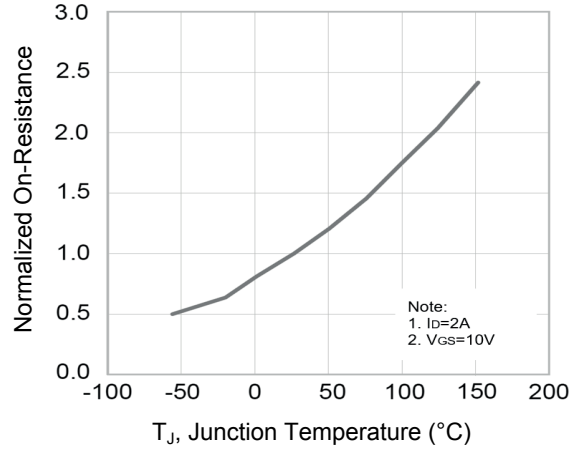


**Figure 6. Gate Charge**

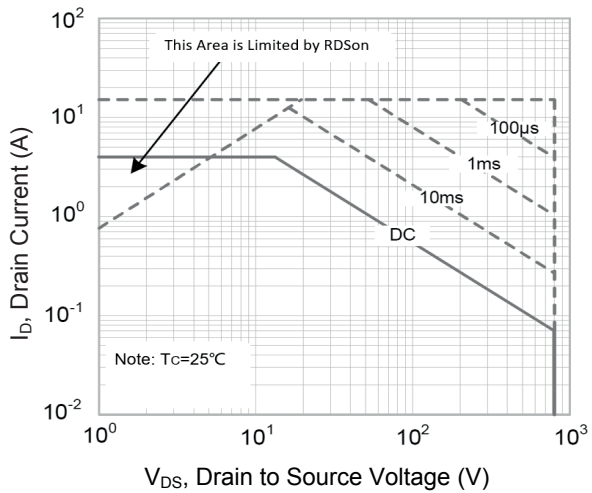
### Typical Electrical and Thermal Characteristic Curves



**Figure 7. Capacitance Characteristics**

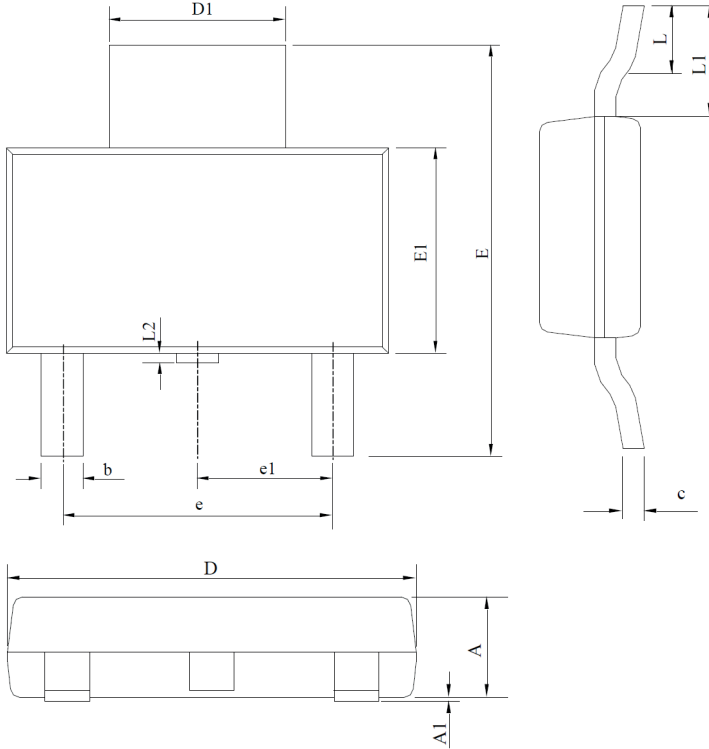


**Figure 8. Normalized  $R_{DS(ON)}$  vs.  $T_J$**



**Figure 9. Safe Operation Area**

## Package Outline Dimensions (SOT-223)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.80	0.059	0.071
A1	0.01	0.10	0.000	0.004
b	0.60	0.80	0.024	0.031
c	0.22	0.32	0.009	0.013
D	6.30	6.70	0.248	0.264
D1	2.90	3.10	0.114	0.122
E	6.70	7.30	0.264	0.287
E1	3.30	3.70	0.130	0.146
e	4.60 BSC		0.181 BSC	
e1	2.30 BSC		0.091 BSC	
L	0.70	1.10	0.028	0.043
L1	1.50	2.00	0.059	0.079
L2	0.00	0.20	0.000	0.008

## Order Information

Device	Package	Marking	Carrier	Quantity
GSJL80R1K3	SOT-223	L80R1K3	Tape & Reel	3,000 pcs / Reel