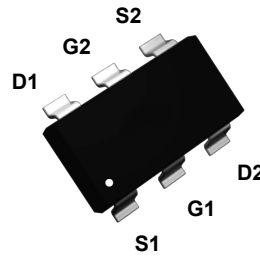
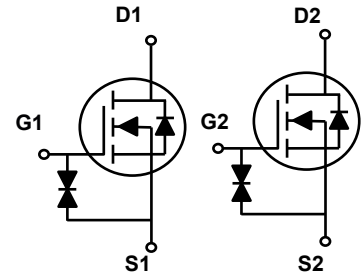


### Main Product Characteristics

$BV_{DSS}$	20V
$R_{DS(ON)}$	380m $\Omega$
$I_D$	0.75A



SOT-363



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 GSFK02002 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 ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain - Source Voltage	$V_{DS}$	20	V
Gate - Source Voltage	$V_{GS}$	$\pm 8$	V
Drain Current - Continuous ( $t \leq 10\text{s}$ )	$I_D$	0.75	A
Total Power Dissipation <sup>1</sup>	$P_D$	0.15	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	833	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^{\circ}\text{C}$

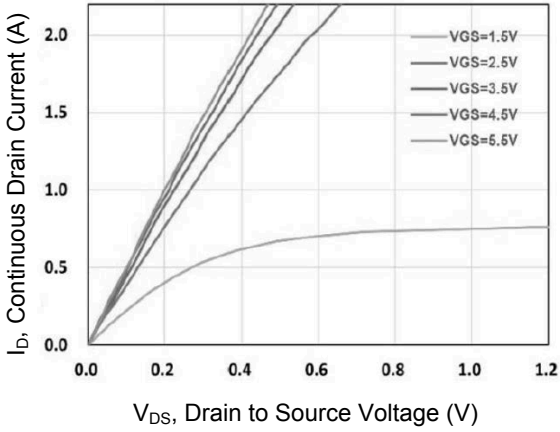
### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain - Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$	-	-	1	$\mu A$
Gate - Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
Static Drain-Source On-Resistance <sup>2</sup>	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=0.65A$	-	270	380	m $\Omega$
		$V_{GS}=2.5V, I_D=0.55A$	-	320	450	
		$V_{GS}=1.8V, I_D=0.45A$	-	390	800	
Gate Threshold Voltage <sup>2</sup>	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.3	0.54	1.1	V
Forward Transconductance <sup>2</sup>	$g_{fs}$	$V_{DS}=10V, I_D=0.8A$	-	1.6	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3</sup>	$Q_g$	$V_{DS}=10V, I_D=1A, V_{GS}=4.5V$	-	2	-	nC
Gate-Source Charge <sup>3</sup>	$Q_{gs}$		-	0.3	-	
Gate-Drain Charge <sup>3</sup>	$Q_{gd}$		-	0.3	-	
Turn-On Delay Time <sup>3</sup>	$t_{d(on)}$	$V_{DS}=10V, R_G=6\Omega, V_{GS}=4.5V, I_D=2A$	-	1.2	-	nS
Rise Time <sup>3</sup>	$t_r$		-	25	-	
Turn-Off Delay Time <sup>3</sup>	$t_{d(off)}$		-	14	-	
Fall Time <sup>3</sup>	$t_f$		-	15	-	
Input Capacitance <sup>3</sup>	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, F=1MHz$	-	43	-	pF
Output Capacitance <sup>3</sup>	$C_{oss}$		-	9	-	
Reverse Transfer Capacitance <sup>3</sup>	$C_{rss}$		-	6	-	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=0.15A$	-	-	1.2	V

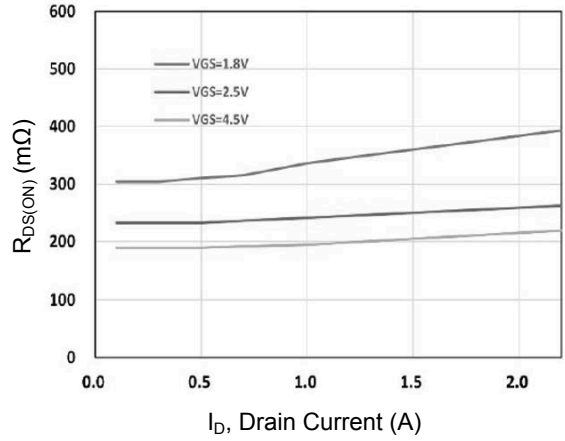
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 0.5\%$ .
3. Guaranteed by design, not subject to production testing.

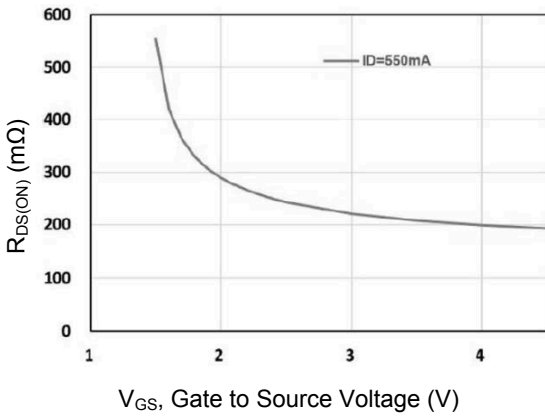
**Typical Electrical and Thermal Characteristic Curves**



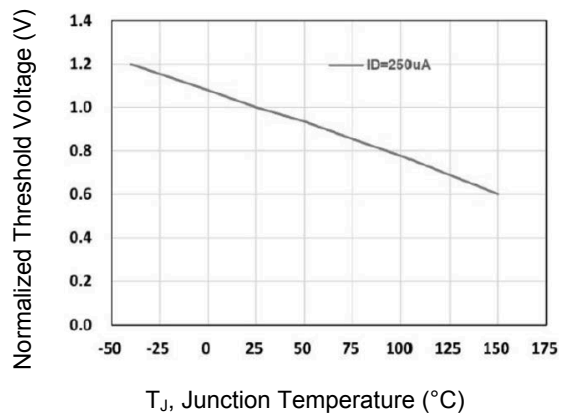
**Figure 1. Output Characteristics**



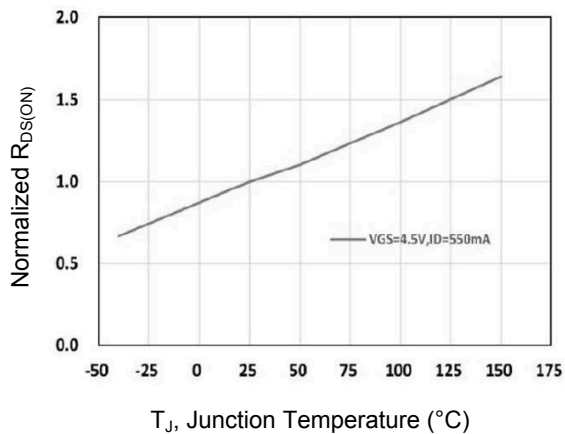
**Figure 2. On-Resistance vs.  $I_D$**



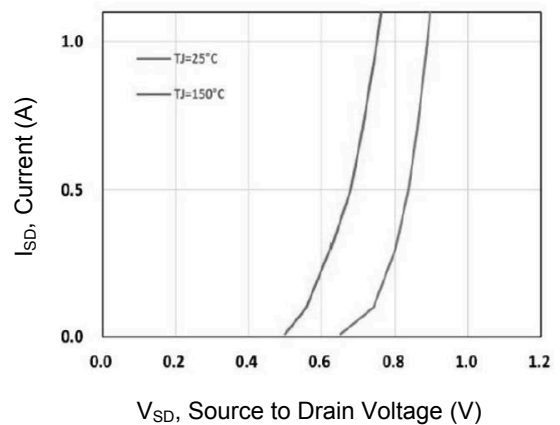
**Figure 3. Normalized  $R_{DS(on)}$  vs.  $V_{GS}$**



**Figure 4. Gate Threshold Voltage**

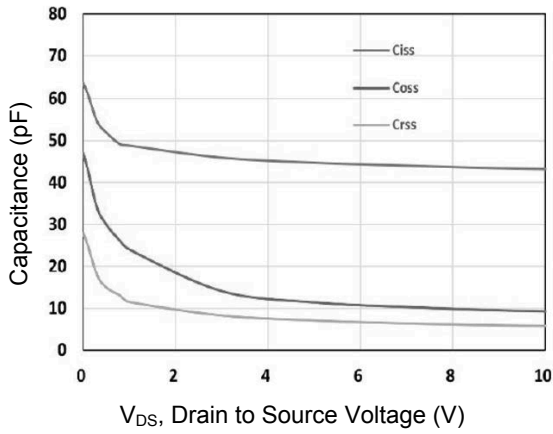


**Figure 5. Drain to Source On Resistance**

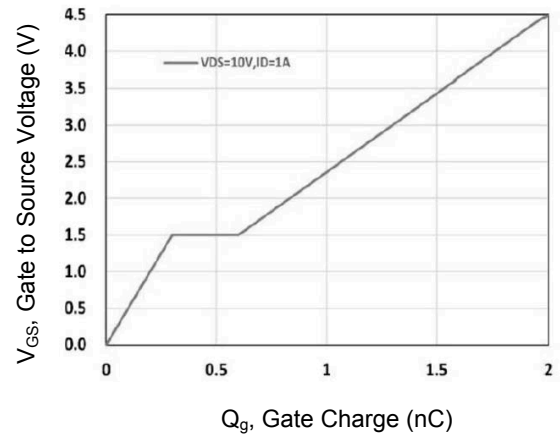


**Figure 6. Source to Drain Diode Forward**

**Typical Electrical and Thermal Characteristic Curves**

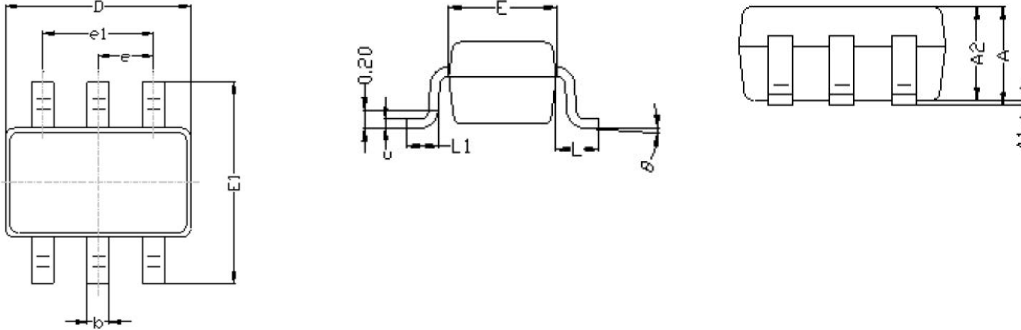


**Figure 7. Capacitance Characteristics**



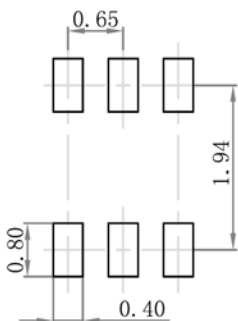
**Figure 8. Gate Charge Characteristics**

### Package Outline Dimensions (SOT-363)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.300	0.006	0.012
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.450	0.010	0.018
θ	0°	8°	0°	8°

### Recommended Pad Layout



Unit: mm

### Order Information

Device	Package	Marking	Carrier	Quantity
GSFK02002	SOT-363	34K	Tape & Reel	3,000 pcs / 7" Reel