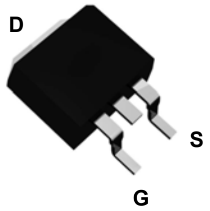
GSFT27010

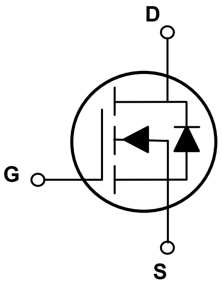
100V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	27mΩ (Max.)
I_D	48A



TO-263 (D^2PAK)



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 GSFT27010 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°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, @ Steady-State (T_C=25°C)^1	I_D	48	A
Continuous Drain Current, @ Steady-State (T_C=100°C)^1		34	A
Pulsed Drain Current (T_C=25°C)^2	I_{DM}	180	A
Power Dissipation (T_C=25°C)^3	P_D	160	W
Single Pulse Avalanche Energy	E_{AS}	9.8	mJ
Single Pulse Avalanche Current	I_{AS}	14	A
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.08	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C
Soldering Temperature (SMD)	T_{sold}	260	°C

Electrical Characteristics (T_A=25°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=250μA	100	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V, T_J=25°C	-	-	1.0	μA
		V_{DS}=100V, V_{GS}=0V, T_J=125°C	-	1.2	-	
Gate-to-Source Forward Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=20V	-	-	100	nA
		V_{DS}=0V, V_{GS}=-20V	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=15A	-	19	27	mΩ
		V_{GS}=4.5V, I_D=10A	-	32	40	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.1	-	2.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	1056	-	pF
Output Capacitance	C_{oss}		-	131	-	
Reverse Transfer Capacitance	C_{rss}		-	3.8	-	
Total Gate Charge[4,5]	Q_g	I_D=10A, V_{DD}=50V, V_{GS}=10V	-	16	-	nC
Gate-to-Source Charge[4,5]	Q_{gs}		-	4.1	-	
Gate-to-Drain ("Miller") Charge[4,5]	Q_{gd}		-	3.7	-	
Gate Plateau[4,5]	$V_{plateau}$		-	4.0	-	V
Turn-On Delay Time[4,5]	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V, R_G=1.6Ω, I_D=10A	-	6.4	-	nS
Rise Time[4,5]	t_r		-	30	-	
Turn-Off Delay Time[4,5]	$t_{d(off)}$		-	21	-	
Fall Time[4,5]	t_f		-	9.4	-	
Gate Resistance	R_g	f=1MHz	-	1.9	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	48	A
Diode Pulse Current	$I_{S.pulse}$		-	-	180	A
Diode Forward Voltage	V_{SD}	I_S=10A, V_{GS}=0V	-	-	1.4	V
Reverse Recovery Time[4]	t_{rr}	I_S=10A, V_{GS}=0V, V_R=50V, dI_F/dt=100A/us	-	35	-	nS
Reverse Recovery Charge[4]	Q_{rr}		-	38	-	nC

Note:

1. The rated value only refers to the maximum absolute value under 25°C shell temperature in the manual. If the shell temperature is higher than 25°C, the rating shall be reduced according to the actual environmental conditions.
2. Pulse time 5us, and the pulse width is limited to the maximum junction temperature.
3. The value of dissipated power will change with the temperature. When the temperature is higher than 25°C, the value of dissipated power will decrease by 0.04W/°C with each temperature rise of 1°C.
4. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
5. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

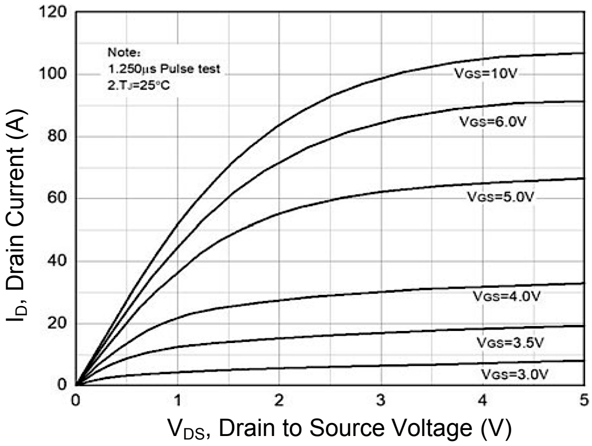


Figure 1. Typical Output Characteristics

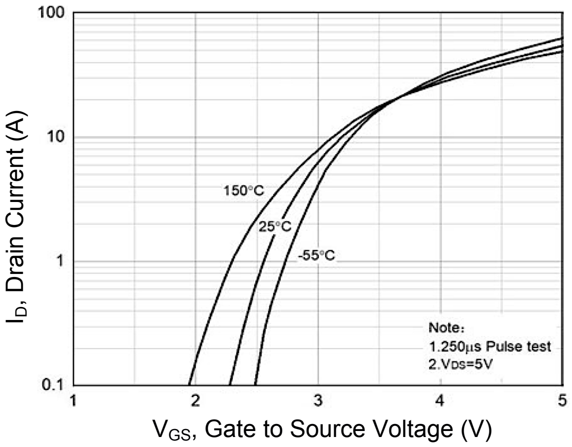


Figure 2. Transfer Characteristics

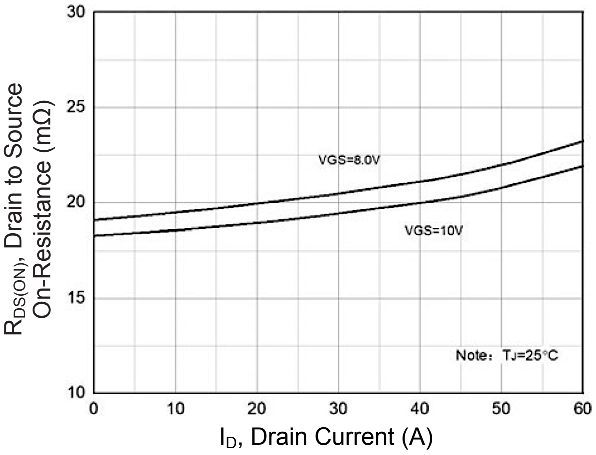


Figure 3. $R_{DS(ON)}$ vs. I_D

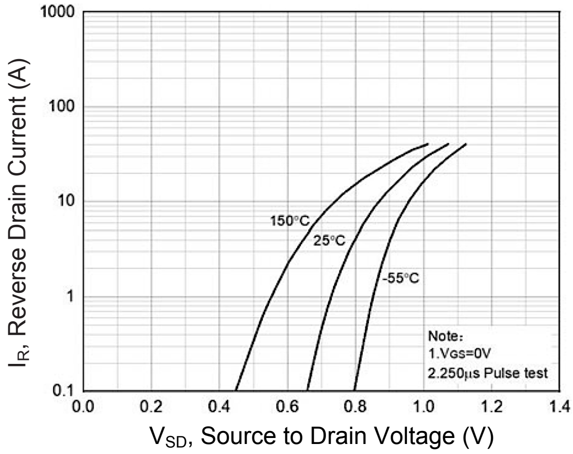


Figure 4. Body Diode Characteristics

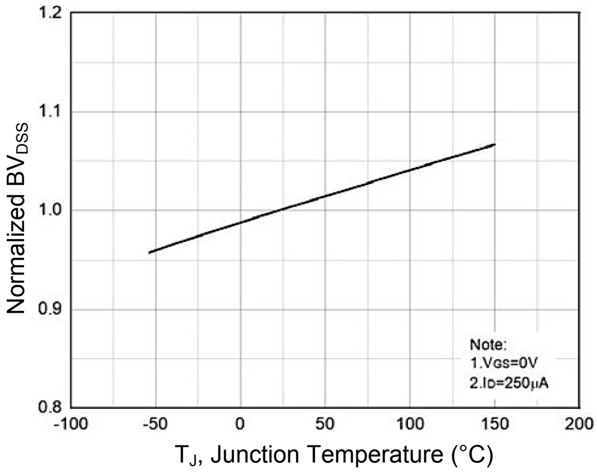


Figure 5. Normalized BV_{DSS} vs. T_J

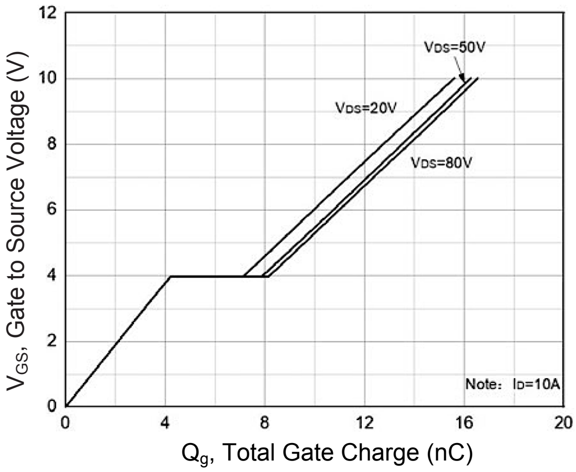


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

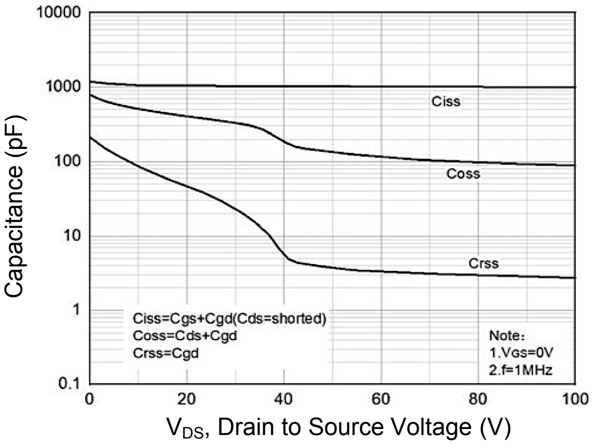


Figure 7. Capacitance Characteristic

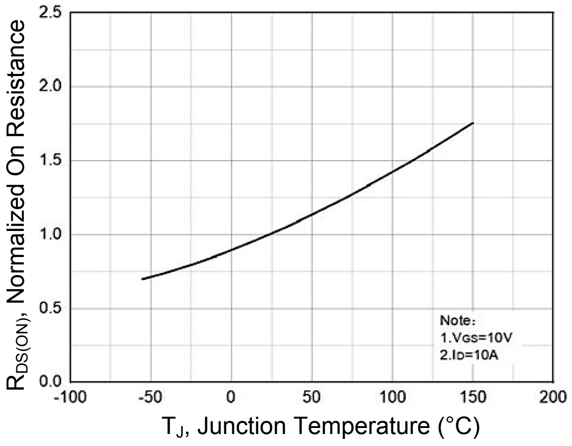


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

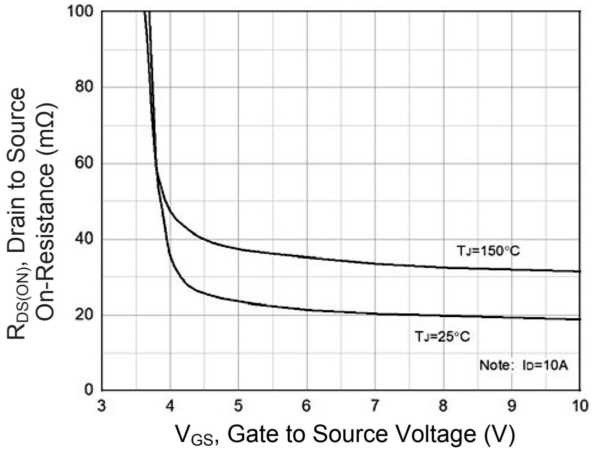


Figure 9. $R_{DS(ON)}$ vs. V_{GS}

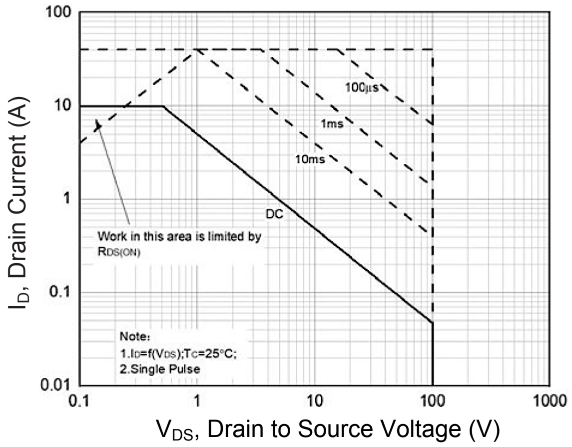
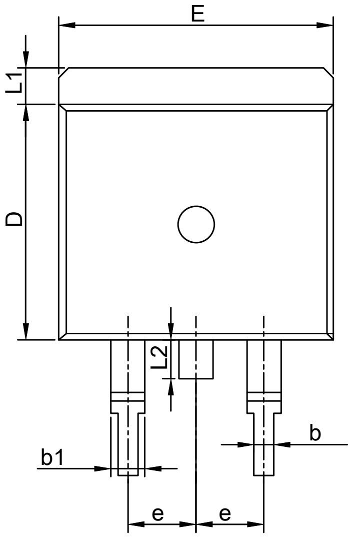
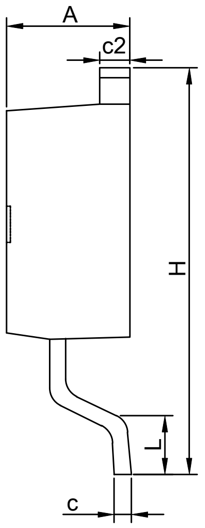


Figure 10. Safe Operation Area

Package Outline Dimensions TO-263 (D^{2}PAK)





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.90	0.169	0.193
b	0.70	0.95	0.028	0.037
b1	1.07	1.50	0.042	0.059
c	0.28	0.60	0.011	0.024
c2	1.17	1.37	0.046	0.054
D	8.40	9.35	0.331	0.368
E	9.80	10.45	0.386	0.411
e	2.54 BSC		0.100 BSC	
H	14.70	16.30	0.579	0.642
L	2.00	3.80	0.079	0.150
L1	0.97	1.42	0.038	0.056
L2	-	1.75	-	0.069

Order Information

Device	Package	Marking	Packaging	SPQ
GSFT27010	TO-263 (D^{2}PAK)	T27010	Tape & Reel	800 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com