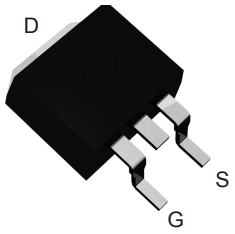
GOOD-ARK SEMICONDUCTOR

GSFT9R8P06

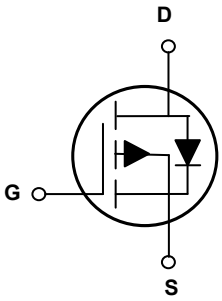
60V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	9.8mΩ (Max.)
I_D	-81A



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 GSFT9R8P06 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}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_C=25°C), V_{GS}=10V[1]	I_D	-81	A
Drain Current-Continuous (T_C=100°C), V_{GS}=10V[1]		-50	A
Drain Current-Pulsed[2]	I_{DM}	-324	A
Maximum Power Dissipation (T_C=25°C)[3]	P_D	125	W
Single Pulse Avalanche Energy (L=0.5mH)	E_{AS}	272	mJ
Single Pulse Avalanche Current (L=0.5mH)	I_{AS}	-33	A
Thermal Resistance, Junction-to-Ambient (t ≤10s)[4]	$R_{\theta JA}$	60	°C/W
Maximum Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250uA	-60	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=-60V, V_{GS}=0V	-	-	-1	μA
Drain-to-Source Leakage Current		V_{DS}=-60V, V_{GS}=0V, T_J=125°C	-	-	-50	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250uA	-2.2	-3.0	-3.8	V
Drain Static-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-20A	-	7.0	9.8	mΩ
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	V_{DD}=-30V, I_D=-20A, V_{GS}=-10V	-	80	-	nC
Gate-Source Charge	Q_{gs}		-	17.4	-	
Gate-Drain Charge	Q_{gd}		-	16.6	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-30V, R_g=3Ω, I_L=20A, V_{GS}=-10V	-	4.4	-	nS
Rise Time	t_r		-	2.9	-	
Turn-Off Delay Time	$t_{d(off)}$		-	16.2	-	
Fall Time	t_f		-	5.8	-	
Input Capacitance	C_{iss}	V_{DS}=-30V, V_{GS}=0V, F=1MHz	-	3821	-	pF
Output Capacitance	C_{oss}		-	1120	-	
Reverse Transfer Capacitance	C_{rss}		-	55	-	
Gate Resistance	R_g	F=1MHz	-	7.8	-	Ω
Drain-Source Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode	-	-	-81	A
Maximum Body-Diode Pulse Current	I_{SM}		-	-	-162	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-10A, T_J=25°C	-	-0.9	-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-20A, di/dt=100A/μs, T_J=25°C	-	65	-	nS
Reverse Recovery Charge	Q_{rr}		-	120	-	nC

Notes:
1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz. copper, in a still air environment with T_A=25°C

Typical Electrical and Thermal Characteristic Curves

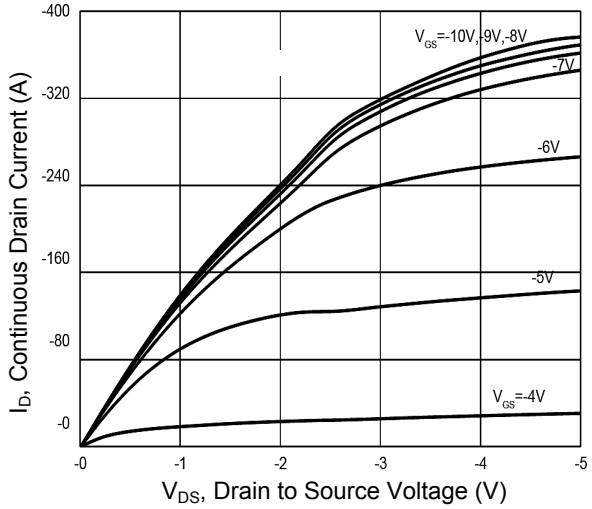


Figure 1. Output Characteristics

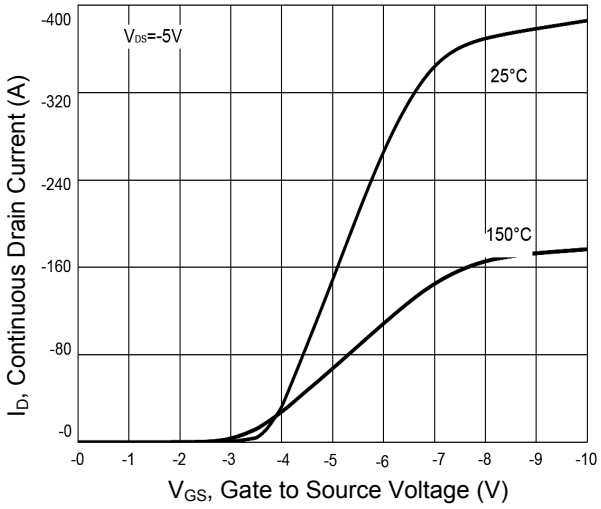


Figure 2. Transfer Characteristics

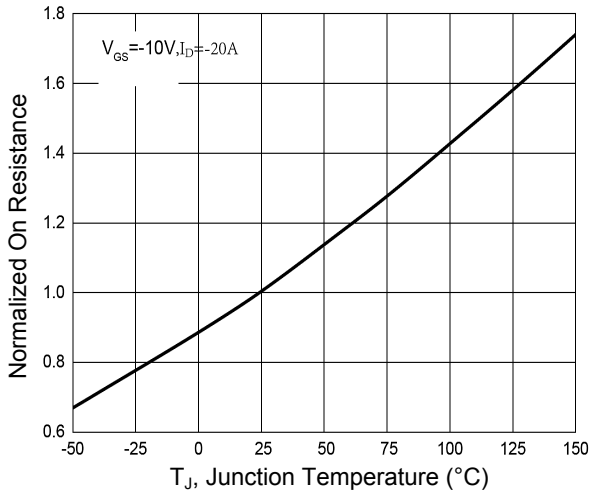


Figure 3. Normalized $R_{DS(ON)}$ vs. T_J

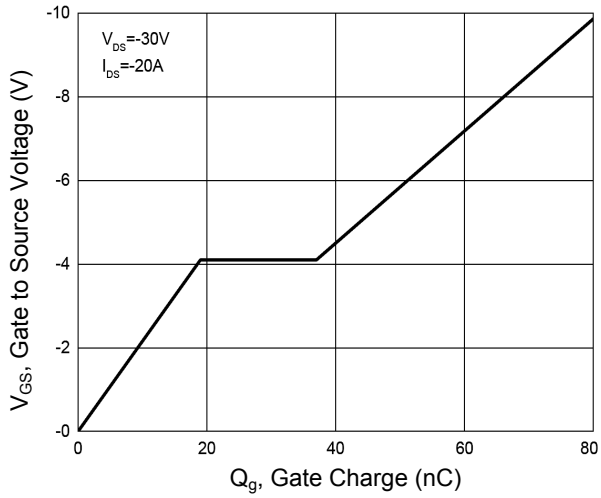


Figure 4. Gate Charge Waveform

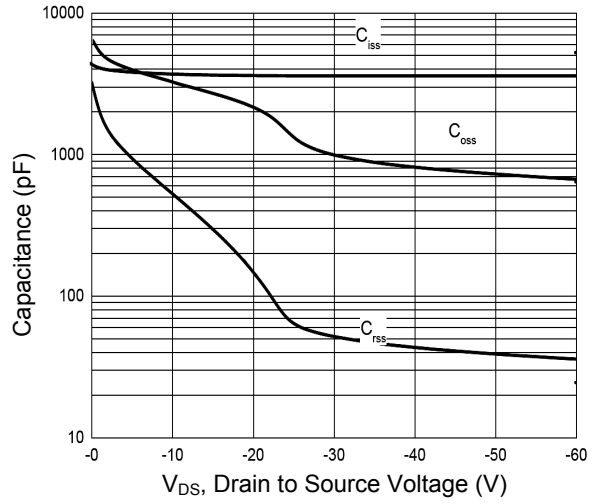


Figure 5. Capacitance Characteristics

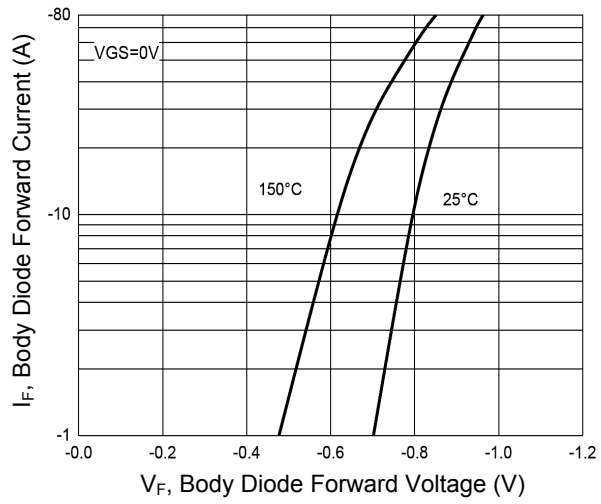
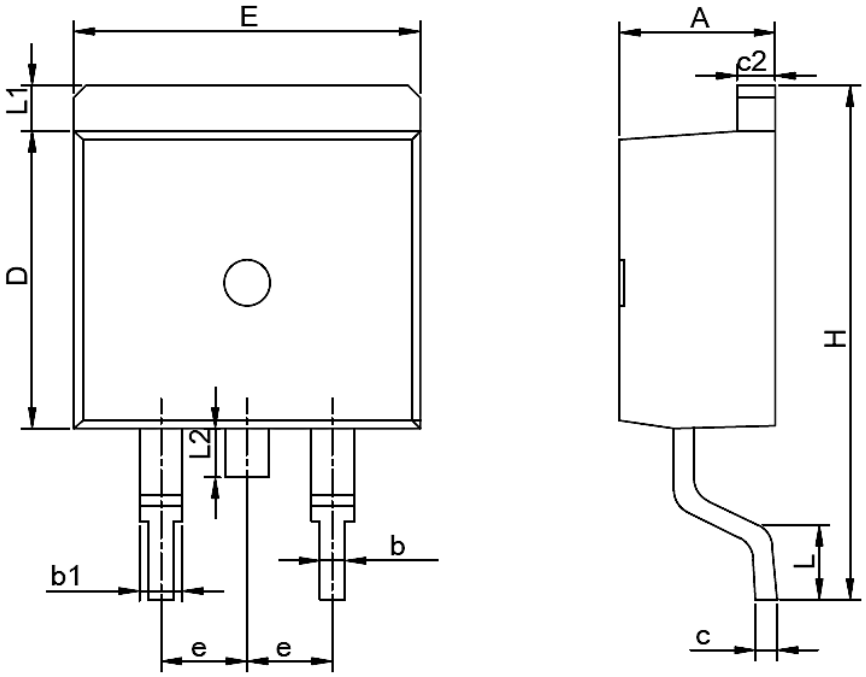


Figure 6. Body Diode Characteristics

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



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
GSFT9R8P06	TO-263 (D^2PAK)	T9R8P06	Tape & Reel	800 Pcs / Reel