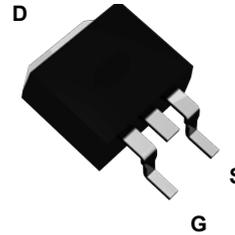
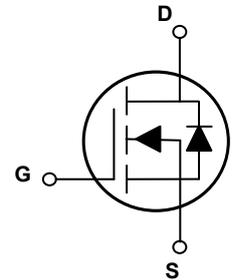


## Main Product Characteristics

$V_{(BR)DSS}$	60V
$R_{DS(ON)}$	9.7m $\Omega$ (max.)
$I_D$	60A



TO-263 (D<sup>2</sup>PAK)



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 GSFT9R706 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V <sub>DS</sub>	60	V
Gate-to-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current, @ Steady-State (T <sub>C</sub> =25°C) <sup>1</sup>	I <sub>D</sub>	60	A
Continuous Drain Current, @ Steady-State (T <sub>C</sub> =100°C)		42.5	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	240	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	60	W
Linear Derating Factor (T <sub>C</sub> =25°C)		0.48	W/°C
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	81	mJ
Thermal Resistance, Junction-to-Case	R <sub>θJC</sub>	2.08	°C/W
Junction-to-Ambient (PCB Mounted, Steady-State) <sup>4</sup>	R <sub>θJA</sub>	55	°C/W
Operating Junction and Storage Temperature Range	T <sub>J</sub> /T <sub>STG</sub>	-55 to +150	°C

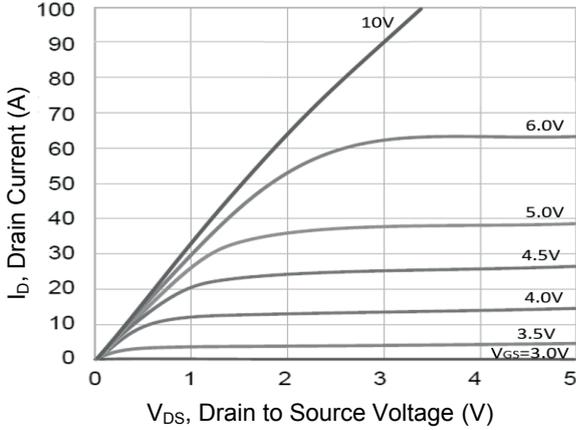
**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$	-	-	1	$\mu A$
		$T_J=125^\circ\text{C}$	-	-	20	
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=13A$	-	8	9.7	m $\Omega$
		$V_{GS}=4.5V, I_D=11A$	-	11	14	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.7	2.5	V
Forward Transconductance	gfs	$V_{DS}=10V, I_D=6A$	-	12	-	S
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=30V, F=1\text{MHz}$	-	1064	2200	$\mu F$
Output Capacitance	$C_{oss}$		-	434	870	
Reverse Transfer Capacitance	$C_{rss}$		-	26	54	
Total Gate Charge	$Q_g$	$I_D=13A, V_{DS}=48V, V_{GS}=10V$	-	18	-	nC
Gate-to-Source Charge	$Q_{gs}$		-	5.6	-	
Gate-to-Drain ("Miller") Charge	$Q_{gd}$		-	2.7	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=30V, I_D=13A, R_{GEN}=3\Omega$	-	8.5	-	nS
Rise Time	$t_r$		-	52	-	
Turn-Off Delay Time	$t_{d(off)}$		-	18	-	
Fall Time	$t_f$		-	8.9	-	
Gate Resistance	$R_g$	$F=1\text{MHz}$	-	1.7	3	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	75	A
Pulsed Source Current (Body Diode)	$I_{SM}$		-	-	300	A
Diode Forward Voltage	$V_{SD}$	$I_S=13A, V_{GS}=0V$	-	1	1.2	V
Reverse Recovery Time	$T_{rr}$	$T_J=25^\circ\text{C}, I_F=13A, di/dt=100A/\mu s$	-	54	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	0.052	-	uc

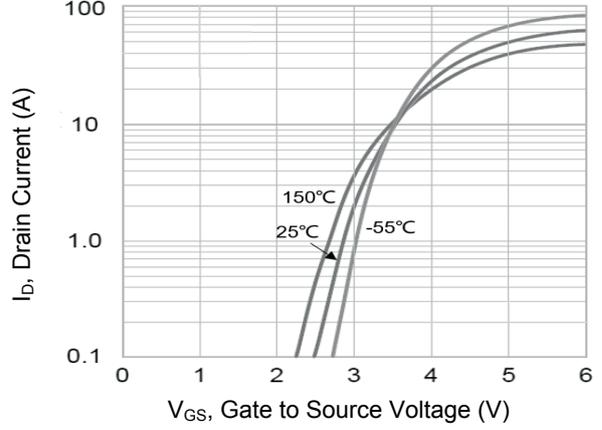
Note:

1. Pulse test: pulse width $\leq 300\mu s$ , duty cycle $\leq 2\%$ .
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $L=0.5\text{mH}, R_G=10\Omega, V_{DD}=50V, T_J=25^\circ\text{C}$ .
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

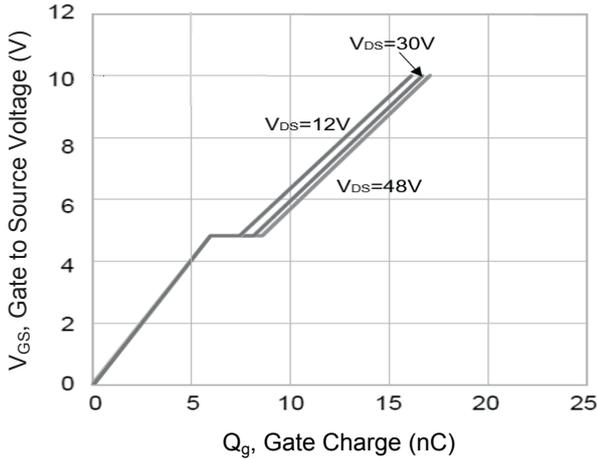
**Typical Electrical and Thermal Characteristic Curves**



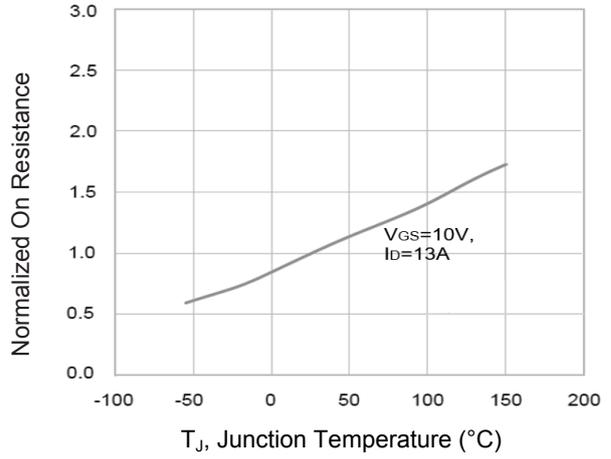
**Figure 1. Output Characteristics**



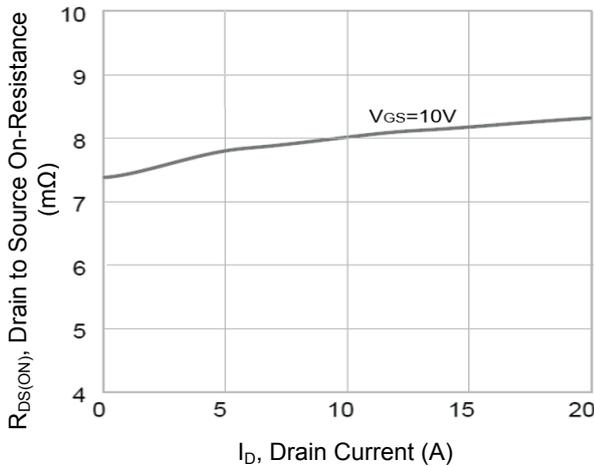
**Figure 2. Transfer Characteristics**



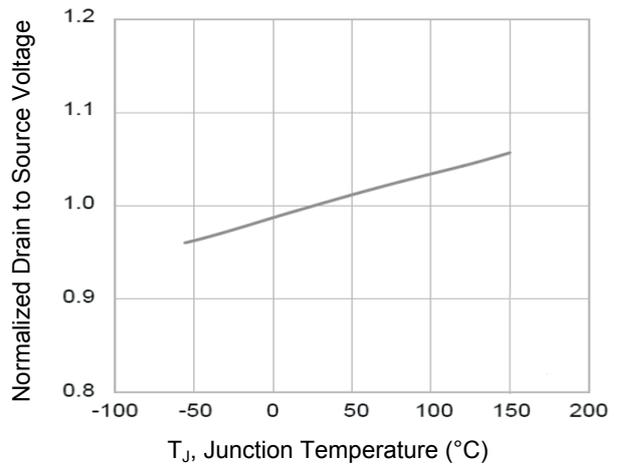
**Figure 3. Gate Charge**



**Figure 4. Normalized  $R_{DS(ON)}$  vs.  $T_J$**

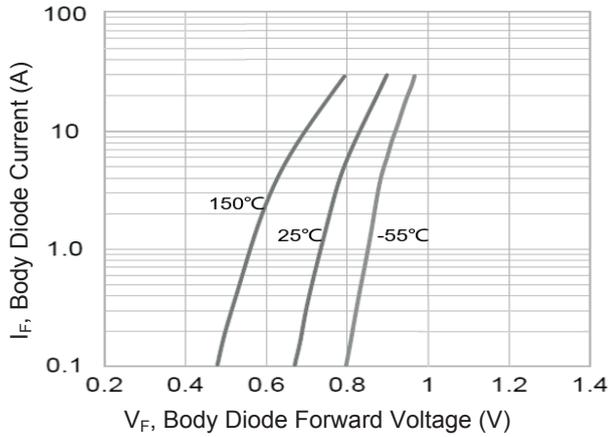


**Figure 5. On-Resistance vs. Drain Current**

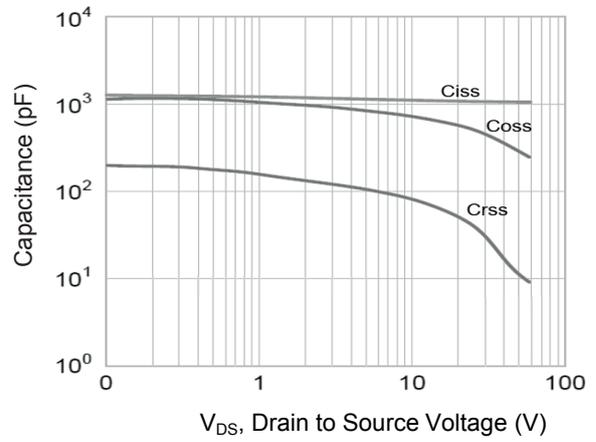


**Figure 6. Normalized  $BV_{DSS}$  vs.  $T_J$**

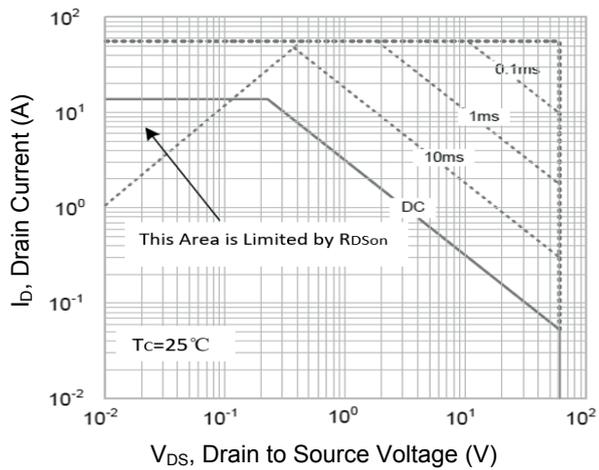
**Typical Electrical and Thermal Characteristic Curves**



**Figure 7. Body Diode Characteristics**

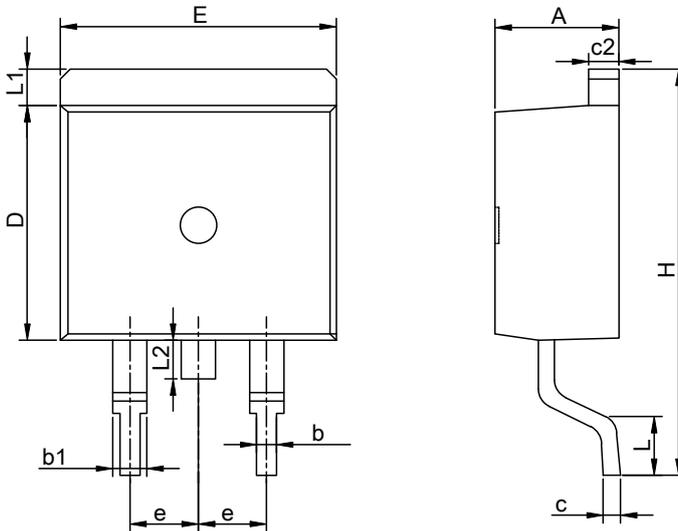


**Figure 8. Transfer Characteristics**



**Figure 9. Safe Operation Area**

**Package Outline Dimensions TO-263(D<sup>2</sup>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	Carrier	Quantity
GSFT9R706	TO-263(D <sup>2</sup> PAK)	T9R706	Tape & Reel	800 Pcs / Reel

For more information, please contact us at: [inquiry@goodarksemi.com](mailto:inquiry@goodarksemi.com)