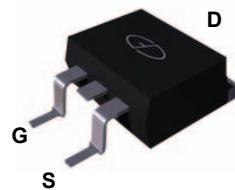
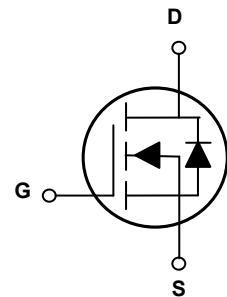


Main Product Characteristics

$V_{(BR)DSS}$	65V
$R_{DS(ON)}$	5.2mΩ
I_D	100A



TO-263(D²PAK)



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 GSFT6982 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	Max.	Unit
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^\circ\text{C}$)	I_D	100	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		63	
Drain Current-Pulsed ¹	I_{DM}	400	A
Single Pulse Avalanche Energy ²	E_{AS}	163	mJ
Single Pulse Avalanche Current ²	I_{AS}	57.1	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	129	W
Power Dissipation-Derate above 25°C		1	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.97	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	65	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=60\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{\text{DS}}=48\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=20\text{A}$	-	4.3	5.2	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=15\text{A}$	-	6.7	8.7	
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=250\mu\text{A}$	1.2	1.6	2.5	V
Dynamic and Switching Characteristics						
Total Gate Charge ³	Q_g	$V_{\text{DS}}=30\text{V}, I_{\text{D}}=50\text{A}$ $V_{\text{GS}}=10\text{V}$	-	31.4	47	nC
Gate-Source Charge ³	Q_{gs}		-	6.5	10	
Gate-Drain Charge ³	Q_{gd}		-	13	20	
Turn-On Delay Time ³	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=30\text{V}, R_{\text{G}}=6\Omega$ $V_{\text{GS}}=10\text{V}, I_{\text{D}}=50\text{A}$	-	10	15	nS
Rise Time ³	t_r		-	16	24	
Turn-Off Delay Time ³	$t_{\text{d}(\text{off})}$		-	42	63	
Fall Time ³	t_f		-	38	57	
Input Capacitance ³	C_{iss}	$V_{\text{DS}}=30\text{V}, V_{\text{GS}}=0\text{V}, F=1\text{MHz}$	-	1640	2460	pF
Output Capacitance ³	C_{oss}		-	946	1420	
Reverse Transfer Capacitance ³	C_{rss}		-	25	38	
Gate Resistance ³	R_g	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=0\text{V}, F=1\text{MHz}$	-	1.2	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_s	$V_G=V_D=0\text{V},$ Force Current	-	-	100	A
Pulsed Source Current	I_{SM}		-	-	200	A
Diode Forward Voltage	V_{SD}	$V_{\text{GS}}=0\text{V}, I_s=1\text{A}, T_J=25^\circ\text{C}$	-	-	1	V
Reverse Recovery Time	t_{rr}	$V_R=50\text{V}, I_s=10\text{A}$ $dI/dt=100\text{A}/\mu\text{s}$ $T_J=25^\circ\text{C}$	-	56	-	nS
Reverse Recovery Charge	Q_{rr}		-	73	-	nC

Note:

- Repetitive rating: Pulsed width limited by maximum junction temperature.
- $V_{\text{DD}}=25\text{V}, V_{\text{GS}}=10\text{V}, L=0.1\text{mH}, I_{\text{AS}}=57.1\text{A}, R_{\text{G}}=25\Omega$, starting $T_J=25^\circ\text{C}$.
- Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

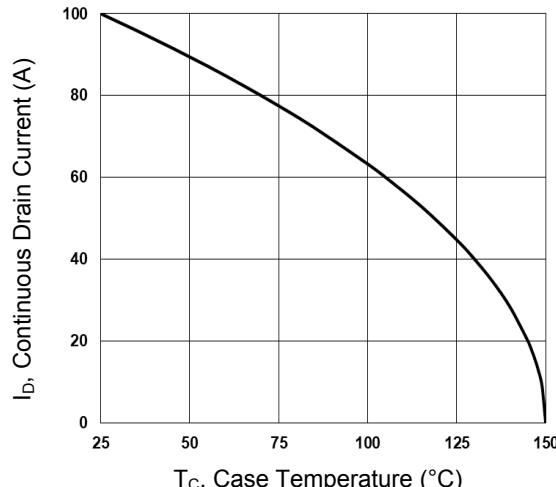


Figure 1. Continuous Drain Current vs. T_c

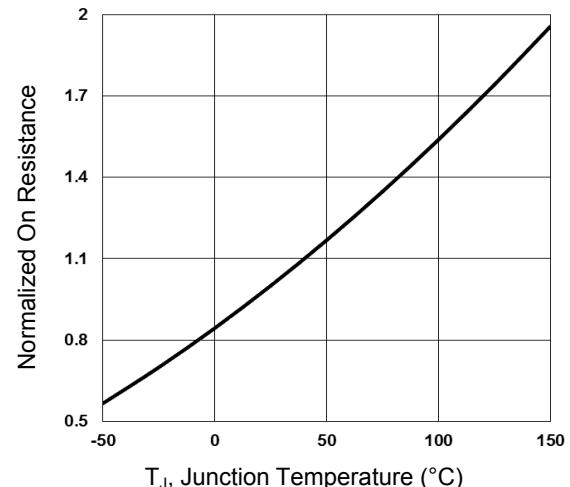


Figure 2. Normalized R_{DS(ON)} vs. T_j

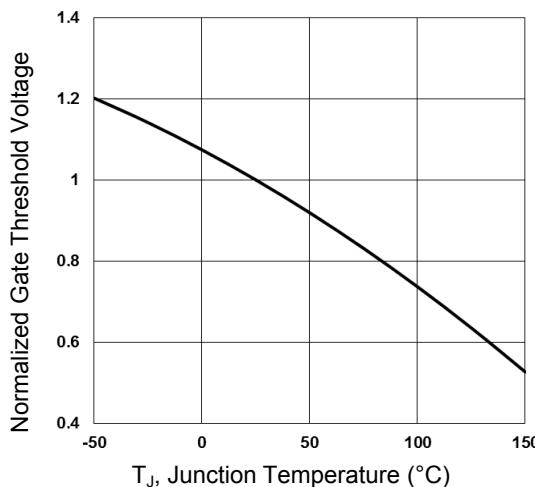


Figure 3. Normalized V_{th} vs. T_j

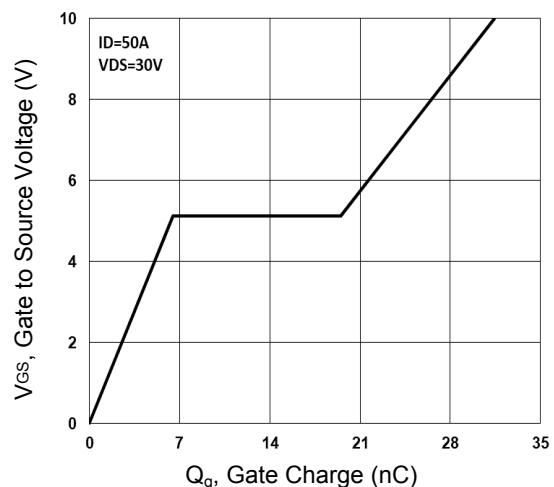


Figure 4. Gate Charge Characteristic

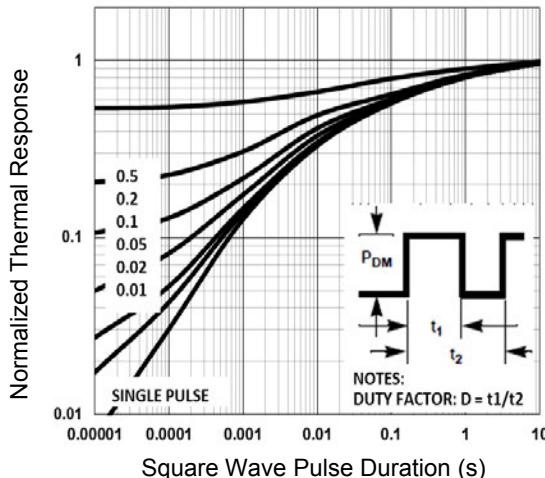


Figure 5. Normalized Transient Impedance

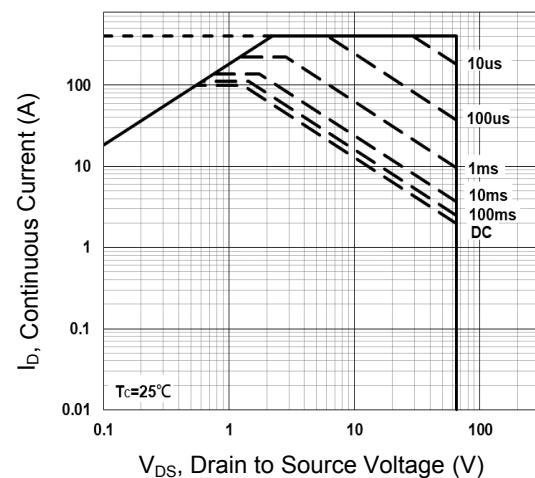


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

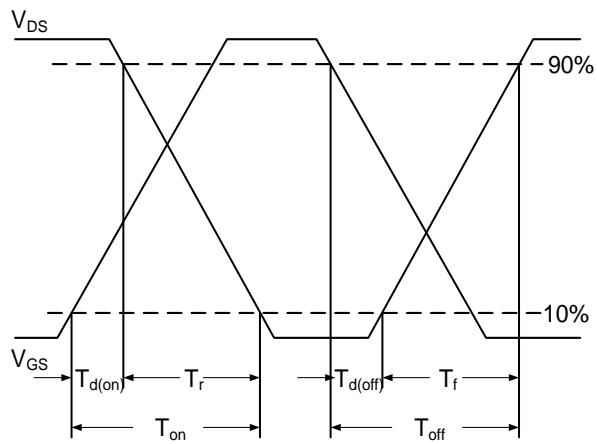


Figure 7. Switching Time Waveform

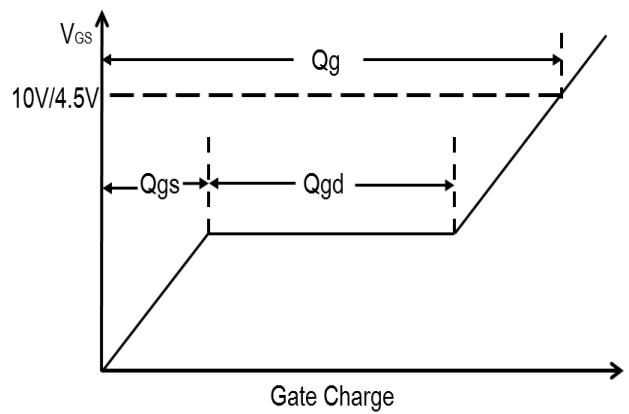
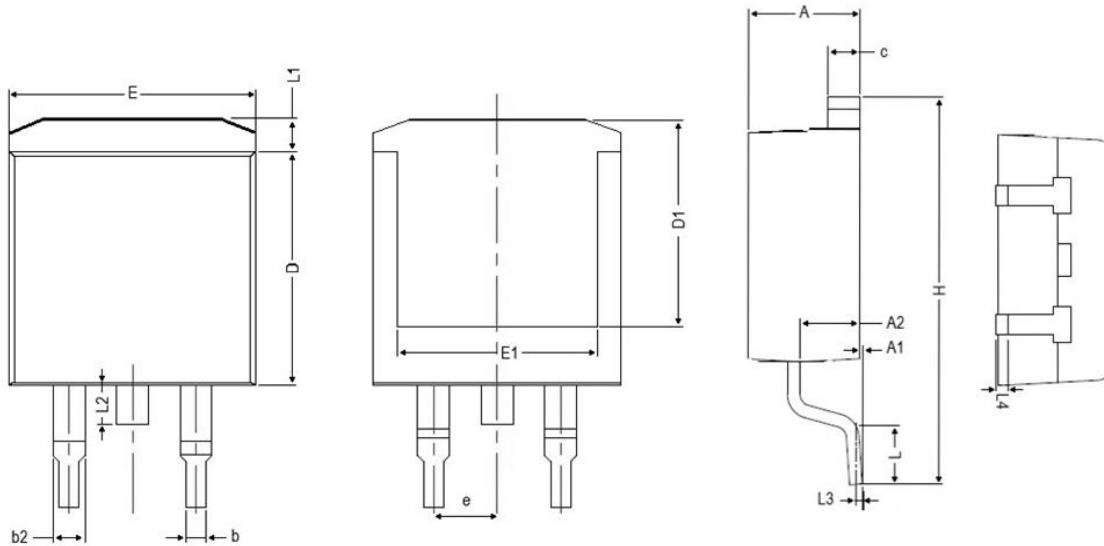


Figure 8. Gate Charge Waveform

Package Outline Dimensions TO-263 (D²PAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.200	4.850	0.165	0.191
A1	0.000	0.300	0.000	0.012
A2	2.200	2.900	0.087	0.114
b	0.700	0.950	0.028	0.037
b2	1.000	1.700	0.039	0.067
c	1.150	1.450	0.045	0.057
D	8.350	9.500	0.329	0.374
D1	6.400	9.150	0.252	0.360
E	9.600	10.500	0.378	0.413
E1	6.850	8.900	0.270	0.350
e	2.540 BSC		0.100 BSC	
H	14.600	15.900	0.575	0.626
L	1.700	2.800	0.067	0.110
L1	1.050	1.700	0.041	0.067
L2	1.300	2.100	0.051	0.083
L3	0.250 BSC		0.010 BSC	
L4	0.200	0.750	0.008	0.030