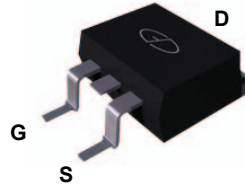
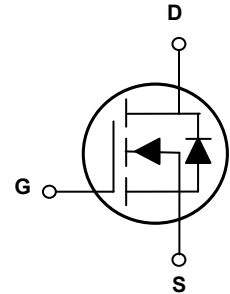


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	4.4m Ω
I_D	145A



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

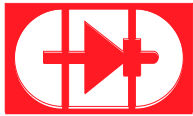


Description

The GSFT10146 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 supply and a wide variety of other applications.

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	+20/-12	V
Drain Current-Continuous (T _C =25°C)	I _D	145	A
Drain Current-Continuous (T _C =100°C)		92	
Drain Current-Pulsed ¹	I _{DM}	580	A
Single Pulse Avalanche Energy ²	E _{AS}	605	mJ
Single Pulse Avalanche Current ²	I _{AS}	110	A
Power Dissipation (T _C =25°C)	P _D	275	W
Power Dissipation-Derate above 25°C		2.22	
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62	°C/W
Thermal Resistance, Junction-to-Case	R _{θJC}	0.45	°C/W
Operating Junction Temperature Range	T _J	-50 To +150	°C
Storage Temperature Range	T _{STG}	-50 To +150	°C



Electrical Characteristics (T_J=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 =250μA	100	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =80V, V _{GS} =0V, T _J =85°C	-	-	10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =20V, V _{DS} =0V	-	-	100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	3.7	4.4	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	2	3	4	V
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =3A	-	20	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q _g	V _{DS} =50V, I _D =10A V _{GS} =10V	-	88	175	nC
Gate-Source Charge ^{3,4}	Q _{gs}		-	18.5	37	
Gate-Drain Charge ^{3,4}	Q _{gd}		-	28.3	56	
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =50V, R _G =3.3Ω V _{GS} =10V, I _D =1A	-	20.6	42	nS
Rise Time ^{3,4}	t _r		-	19.8	40	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	66	132	
Fall Time ^{3,4}	t _f		-	117	234	
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, F=1MHz	-	5100	10200	pF
Output Capacitance	C _{oss}		-	1045	2090	
Reverse Transfer Capacitance	C _{rss}		-	35	70	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.97	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V,	-	-	145	A
Pulsed Source Current	I _{SM}	Force Current	-	-	290	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	-	-	1	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _S =10A di/dt=100A/μs T _J =25°C	-	71	-	nS
Reverse Recovery Charge	Q _{rr}		-	165	-	nC

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=110A, R_G=25Ω, starting T_J=25°C.
3. Pulse test: pulse width ≤300μs, duty cycle ≤2%.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

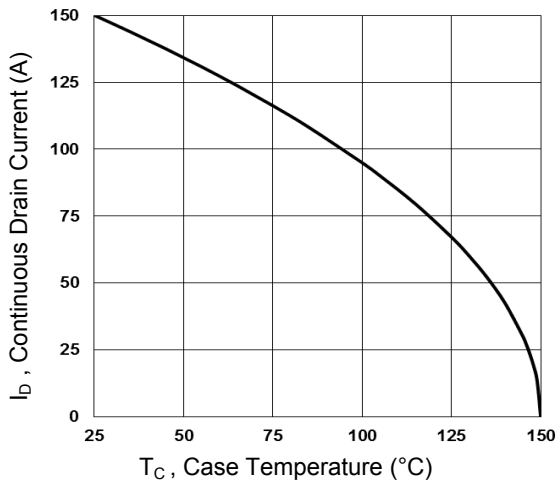


Figure 1. Continuous Drain Current vs. T_C

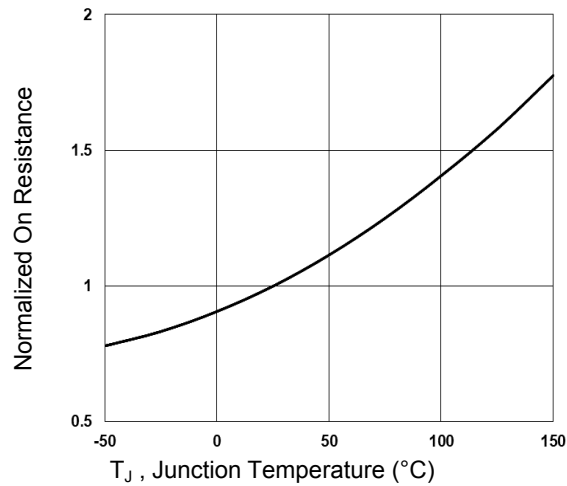


Figure 2. Normalized $R_{DS(on)}$ vs. T_J

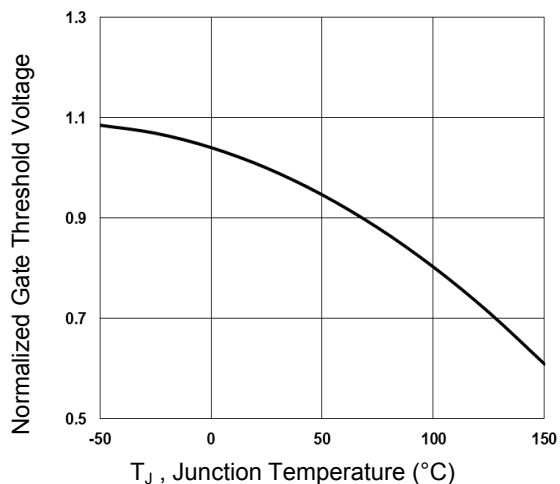


Figure 3. Normalized V_{th} vs. T_J

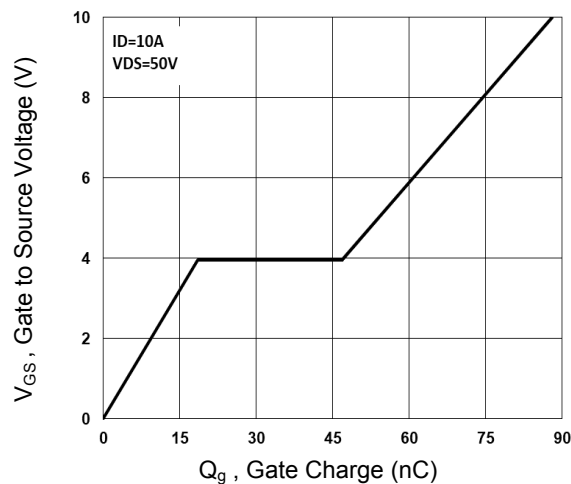


Figure 4. Gate Charge Characteristics

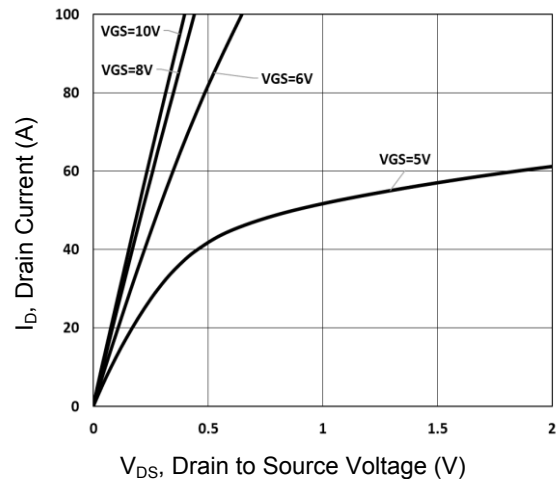


Figure 5. Typical Output Characteristics

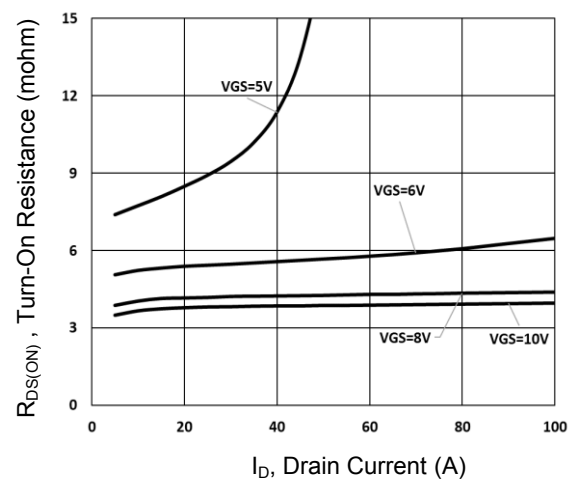


Figure 6. Turn-on Resistance $R_{DS(on)}$ vs I_D

Typical Electrical and Thermal Characteristic Curves

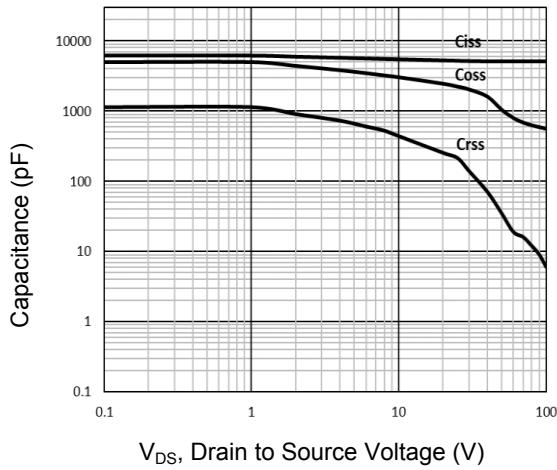


Figure 7. Capacitance Characteristics

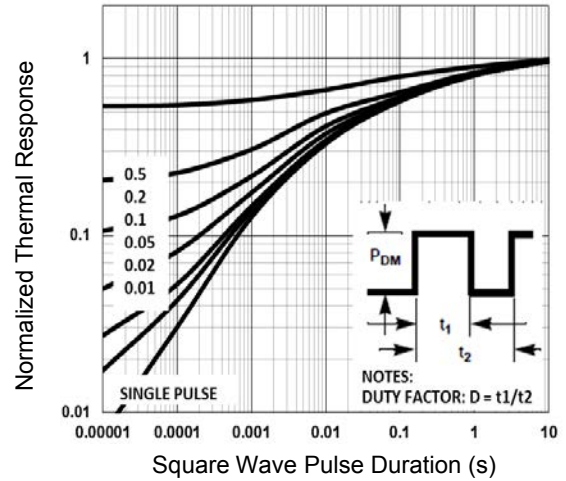


Figure 8. Normalized Transient Impedance

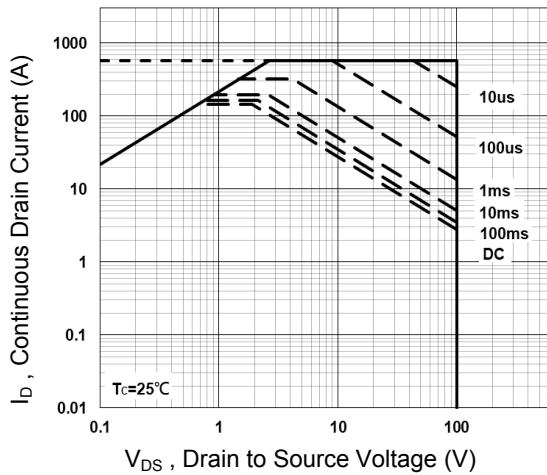


Figure 9. Maximum Safe Operation Area

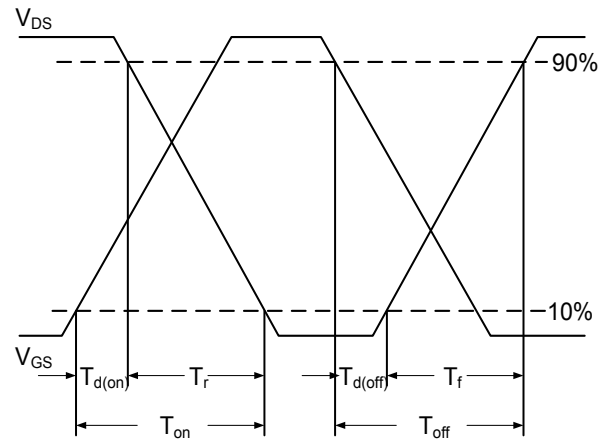


Figure 10. Switching Time Waveform

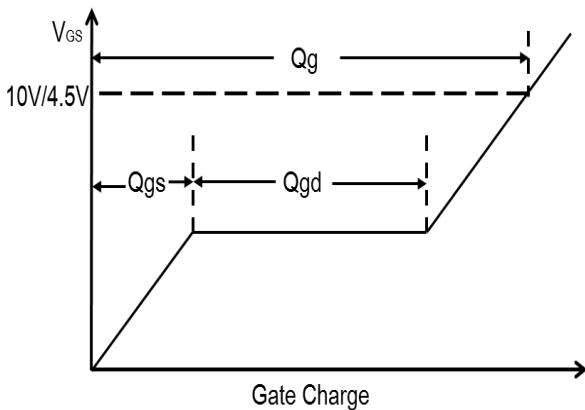
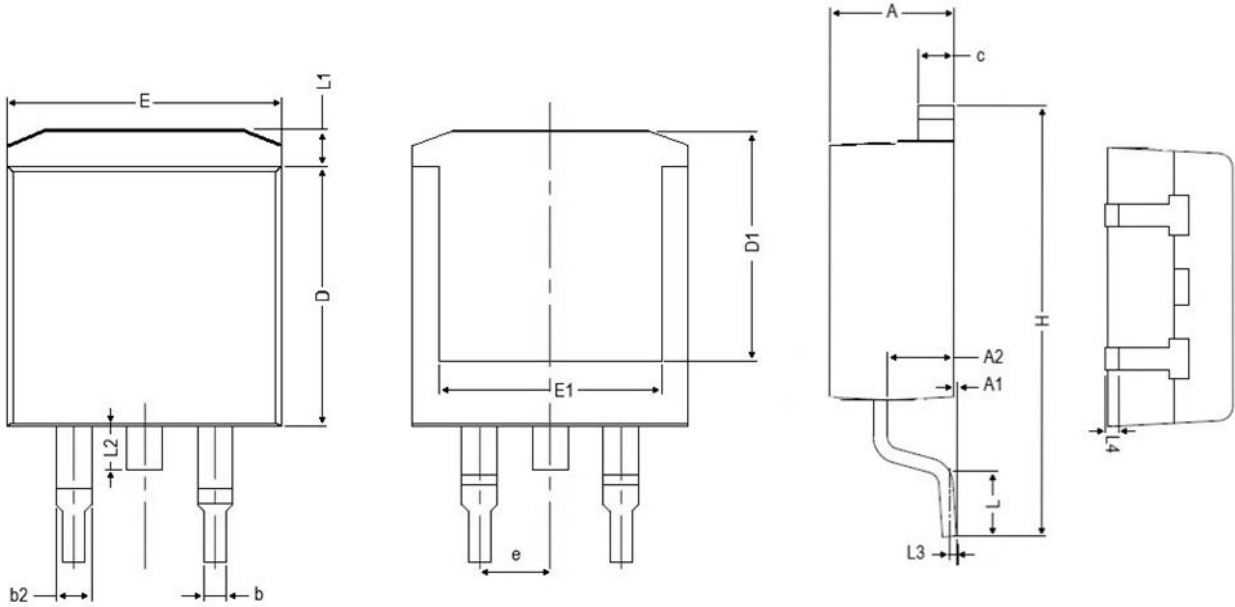


Figure 11. Gate Charge Waveform

Package Outline Dimensions

TO-263 (D²PAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	4.850	4.250	0.191	0.167
A1	0.250	0.000	0.001	0.000
A2	2.900	2.350	0.114	0.093
b	0.950	0.700	0.037	0.028
b2	1.600	1.000	0.063	0.039
c	1.450	1.200	0.057	0.047
D	9.500	8.350	0.374	0.329
D1	9.150	6.400	0.360	0.252
E	10.500	9.600	0.413	0.378
E1	8.900	7.500	0.350	0.295
e	2.540 BSC		0.100 BSC	
H	15.900	14.600	0.626	0.575
L	2.800	2.000	0.110	0.079
L1	1.700	1.150	0.067	0.045
L2	2.100	1.400	0.083	0.055
L3	0.250 BSC		0.010 BSC	
L4	0.750	0.200	0.030	0.001