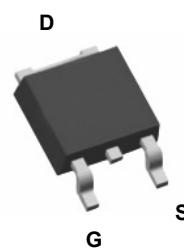
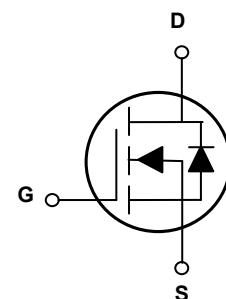


Main Product Characteristics

$V_{(BR)DSS}$	200V
$R_{DS(ON)}$	0.15Ω(Max.)
I_D	18A



TO-252 (DPAK)



Schematic Diagram

Features and Benefits

- Turbo HVMOSFET process technology.
- Low on-resistance and low gate charge.
- Outstanding lightning characteristics.
- Fast switching and reverse body recovery.
- High ruggedness and robustness.



Description

The GSFD2016 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	$V_{(BR)DSS}$	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous, @ Steady-State ¹ ($T_C=25^\circ\text{C}$)	I_D	18	A
Drain Current-Continuous, @ Steady-State ($T_C=100^\circ\text{C}$)		11	
Drain Current-Pulsed ²	I_{DM}	72	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	110	W
Linear Derating Factor ($T_C=25^\circ\text{C}$)		0.88	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	635	mJ
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	620	$^\circ\text{C}/\text{W}$
Junction-to-Case	$R_{\theta JC}$	1.14	$^\circ\text{C}/\text{W}$
Maximum Junction Temperature	T_J	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_D=250\mu\text{A}$	200	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=200\text{V}, V_{\text{GS}}=0\text{V}$	-	-	1	μA
		$T_J=125^\circ\text{C}$	-	-	50	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{\text{GS}}=20\text{V}$	-	-	100	nA
		$V_{\text{GS}}=-20\text{V}$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}}=10\text{V}, I_D=9\text{A}$	-	0.12	0.16	Ω
Gate Resistance	R_g	$f=1\text{MHz}$	-	6.6	-	Ω
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_D=250\mu\text{A}$	2.1	3	3.9	V
Input Capacitance	C_{iss}	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=25\text{V}$ $f=1\text{MHz}$	-	1108	-	pF
Output Capacitance	C_{oss}		-	160	-	
Reverse transfer Capacitance	C_{rss}		-	34	-	
Total Gate Charge	Q_g	$I_D=11\text{A}, V_{\text{DS}}=160\text{V}, V_{\text{GS}}=10\text{V}$	-	41	-	nC
Gate-to-Source Charge	Q_{gs}		-	6	-	
Gate-to-Drain("Miller") Charge	Q_{gd}		-	20	-	
Turn-on Delay Time	$t_{d(\text{on})}$	$V_{\text{GS}}=10\text{V}, V_{\text{DS}}=100\text{V}, R_G=2.5\Omega, I_D=11\text{A}$	-	15	-	nS
Rise Time	t_r		-	47	-	
Turn-Off Delay Time	$t_{d(\text{off})}$		-	110	-	
Fall Time	t_f		-	36	-	

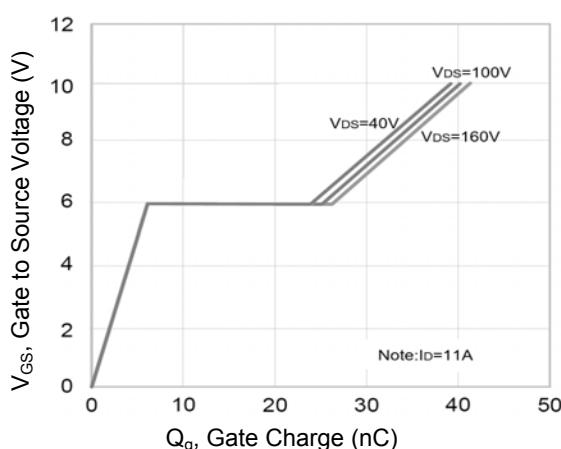
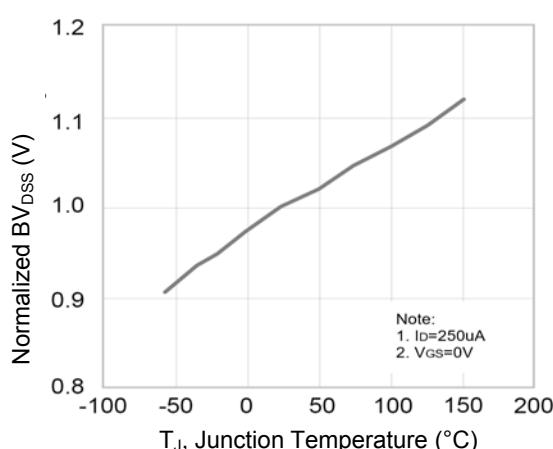
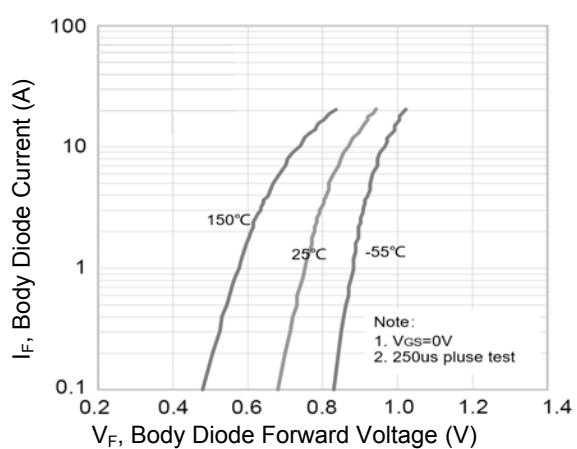
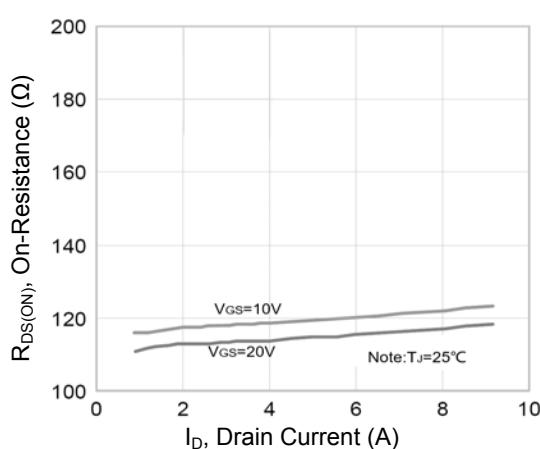
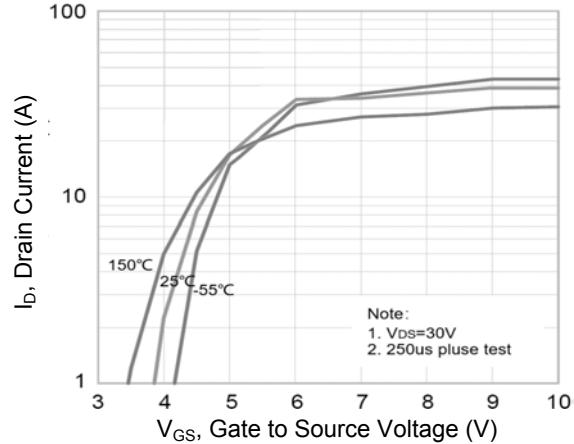
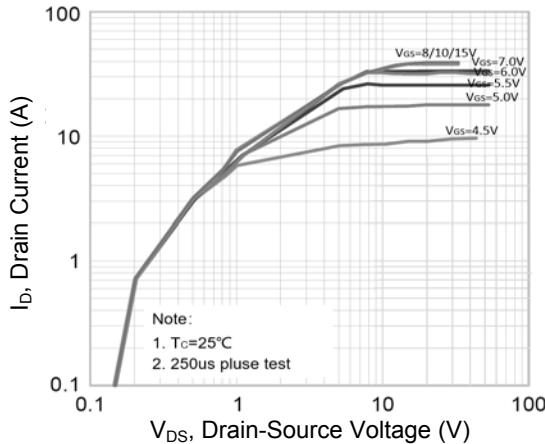
Source-Drain Ratings and Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current (Body Diode)	I_s	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	18	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	72	A
Diode Forward Voltage	V_{SD}	$I_s=11\text{A}, V_{\text{GS}}=0\text{V}$	-	-	1.4	V
Reverse Recovery Time	t_{rr}	$T_J=25^\circ\text{C}, I_F=11\text{A}, d_i/d_t=100\text{A}/\mu\text{s}$	-	160	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.98	-	uc

Notes

1. Pulse test: Pulse Width $\leq 300\text{us}$, Duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=30\text{mH}, V_{\text{DD}}=100\text{V}, T_J=25^\circ\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves



Typical Electrical and Thermal Characteristic Curves

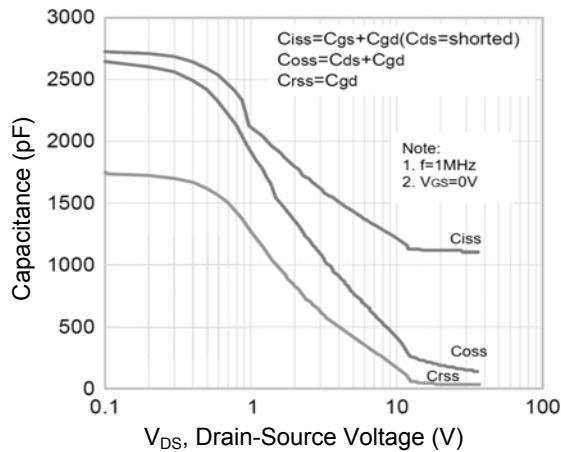


Figure 7. Capacitance Characteristic

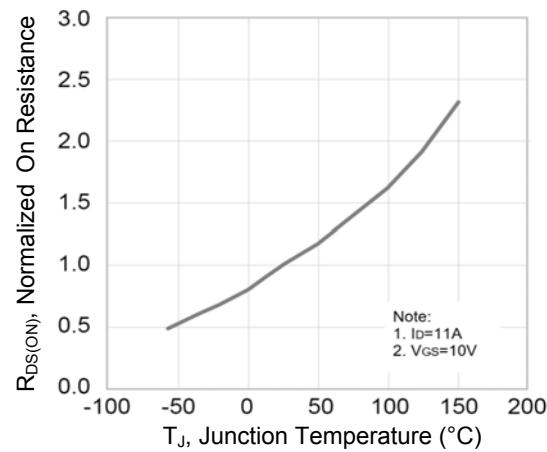


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

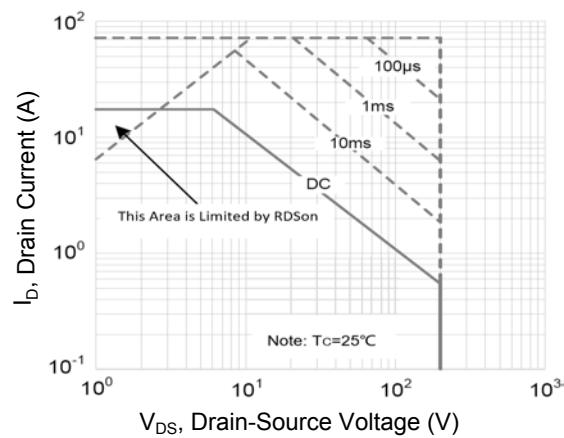
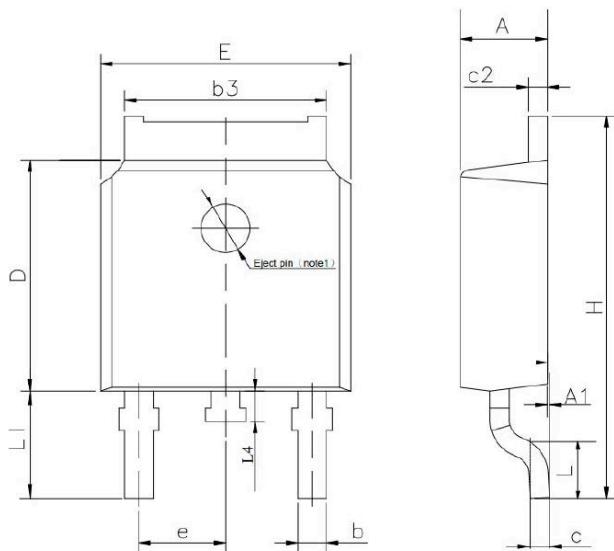


Figure 9. Safe Operation Area

Package Outline Dimensions TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.100	2.500	0.083	0.098
A1	0.000	0.127	0.000	0.005
b	0.660	0.890	0.026	0.035
b3	5.100	5.460	0.201	0.215
c	0.450	0.650	0.018	0.026
c2	0.450	0.650	0.018	0.026
D	5.800	6.400	0.228	0.252
E	6.300	6.900	0.248	0.272
e	2.300 TYP		0.091 TYP	
H	9.600	10.600	0.378	0.417
L	1.400	1.700	0.055	0.067
L1	2.900 REF		0.114 REF	
L4	0.600	1.000	0.024	0.039