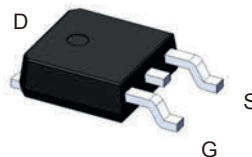
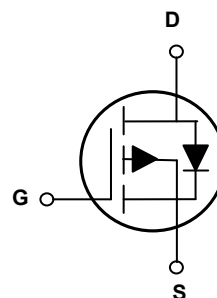


Main Product Characteristics

$V_{(BR)DSS}$	-100V
$R_{DS(ON)}$	108m Ω (Max.)
I_D	-20A



TO-252



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 GSFD111P10 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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	-20	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		-14	A
Pulsed Drain Current ($T_C=25^\circ\text{C}$) ¹	I_{DM}	-80	A
Power Dissipation ($T_C=25^\circ\text{C}$) ²	P_D	60	W
Single Pulse Avalanche Energy	E_{AS}	156	mJ
Single Pulse Current	I_{AS}	-25	A
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62.0	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.08	$^\circ\text{C/W}$
Soldering Temperature (SMD)	T_{sld}	260	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-100	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V, T _J =25°C	-	-	-1.0	μA
		V _{DS} =-100V, V _{GS} =0V, T _J =125°C	-	-	-100	
Gate-to-Source Forward Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =20V	-	-	100	nA
		V _{DS} =0V, V _{GS} =-20V	-	-	-100	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.1	-	-2.6	V
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-10A	-	86	108	mΩ
		V _{GS} =-4.5V, I _D =-7A	-	90	120	
Dynamic and Switching Characteristics						
Input Capacitance	C _{iSS}	V _{GS} =0V, V _{DS} =-50V, f=1MHz	-	3770	-	pF
Output Capacitance	C _{oSS}		-	73	-	
Reverse Transfer Capacitance	C _{rSS}		-	67	-	
Total Gate Charge ^{3,4}	Q _g	I _D =-10A, V _{DD} =-50V, V _{GS} =-10V	-	73	-	nC
Gate-to-Source Charge ^{3,4}	Q _{gs}		-	8.6	-	
Gate-to-Drain ("Miller") Charge ^{3,4}	Q _{gd}		-	16.5	-	
Gate-to-Plateau ^{3,4}	V _{plateau}		-	4.2	-	V
Turn-On Delay Time ^{3,4}	T _{d(on)}	V _{DD} =-50V, V _{GS} =-10V, R _G =9.1Ω, I _D =-10A	-	11.8	-	nS
Rise Time ^{3,4}	T _r		-	16.9	-	
Turn-Off Delay Time ^{3,4}	T _{d(off)}		-	115	-	
Fall Time ^{3,4}	T _f		-	43	-	
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	-20	A
Diode Pulse Current	I _{S,pulse}		-	-	-80	A
Diode Forward Voltage	V _{SD}	I _S =-10A, V _{GS} =0V	-	-	-1.4	V
Reverse Recovery Time ³	t _{rr}	I _S =-10A, V _{GS} =0V, dI _F /dt=100A/us	-	44.5	-	nS
Reverse Recovery Charge ³	Q _{rr}		-	98.4	-	nC

Notes:

- Pulse time is 5μs.
- The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power value will decrease by 0.83°C/W for every 1 degree increase in temperature.
- Pulse test: Pulse width ≤300μs, duty cycle ≤2%.
- Basically unaffected by operating temperature.

Typical Electrical and Thermal Characteristic Curves

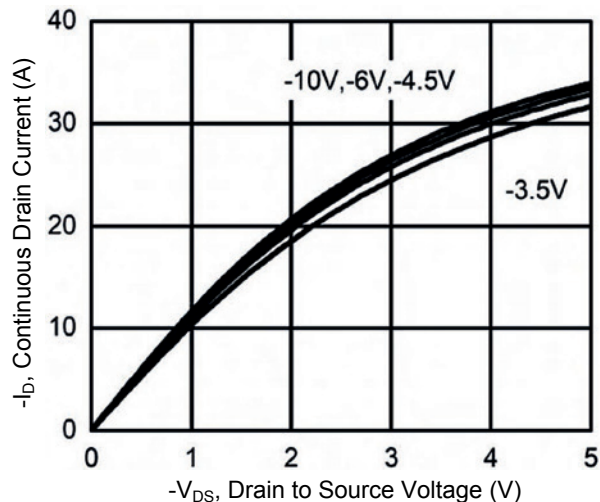


Figure 1. Typical Output Characteristics

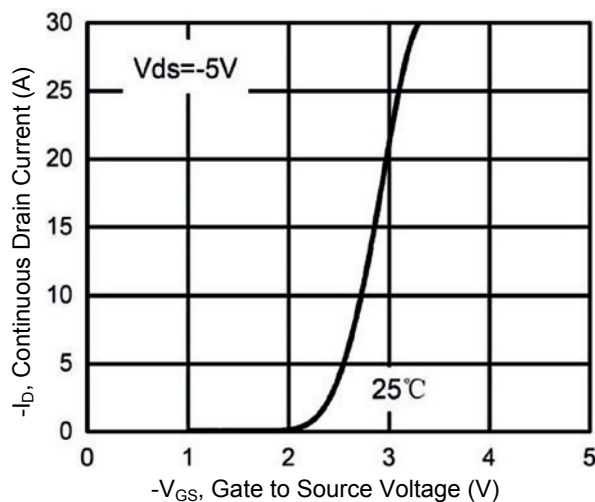


Figure 2. Typical Transfer Characteristics

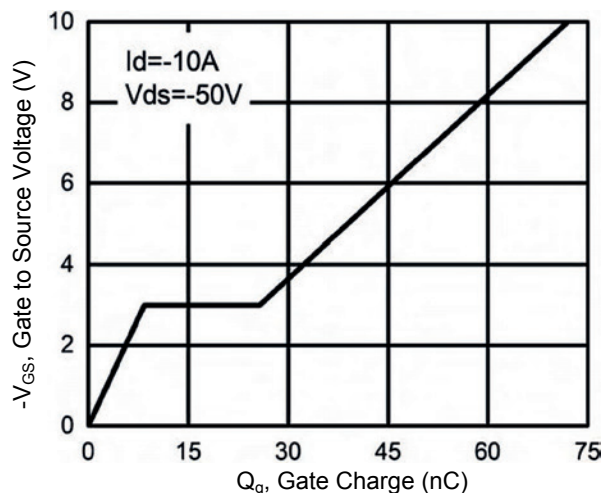


Figure 3. Gate Charge

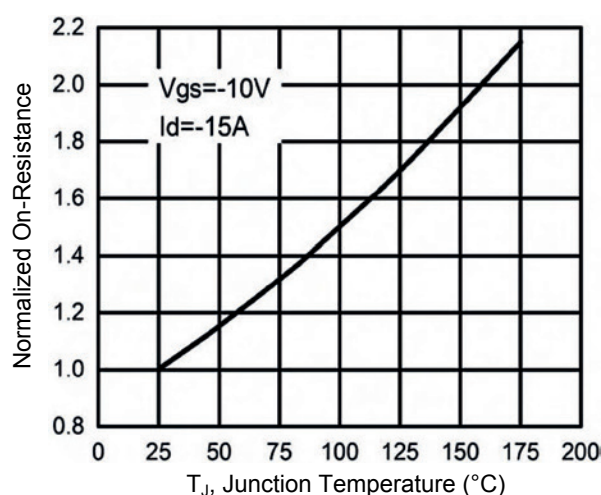


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

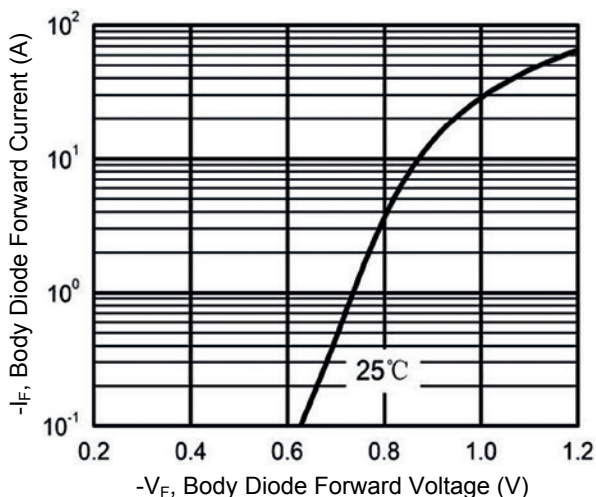


Figure 5. Body Diode Characteristics

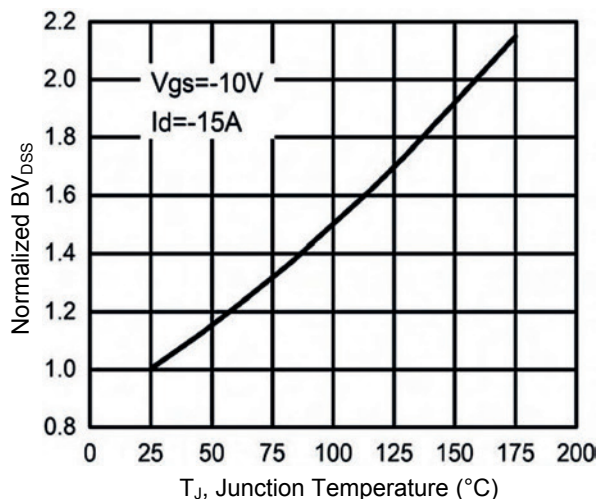


Figure 6. Normalized BV_{DSS} vs. T_J

Typical Electrical and Thermal Characteristic Curves

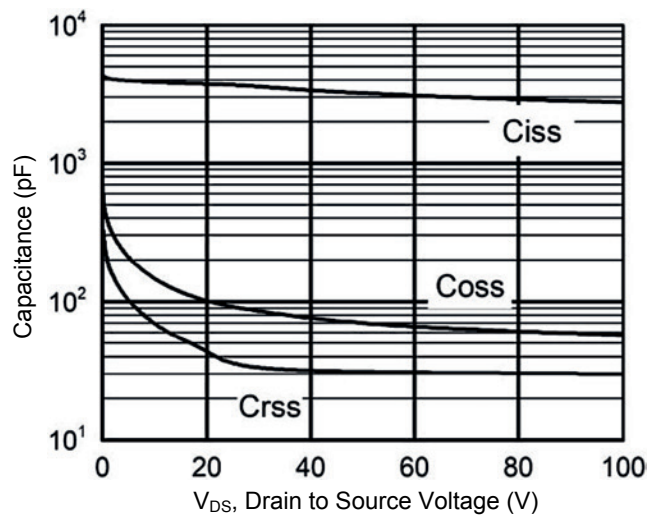


Figure 7. Typical Capacitance Characteristics

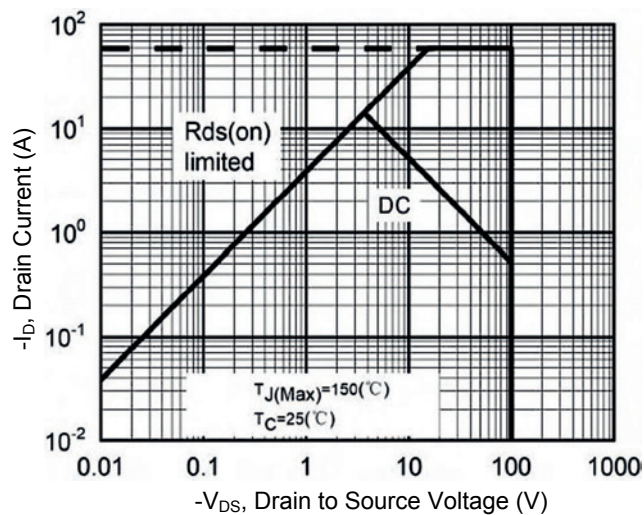
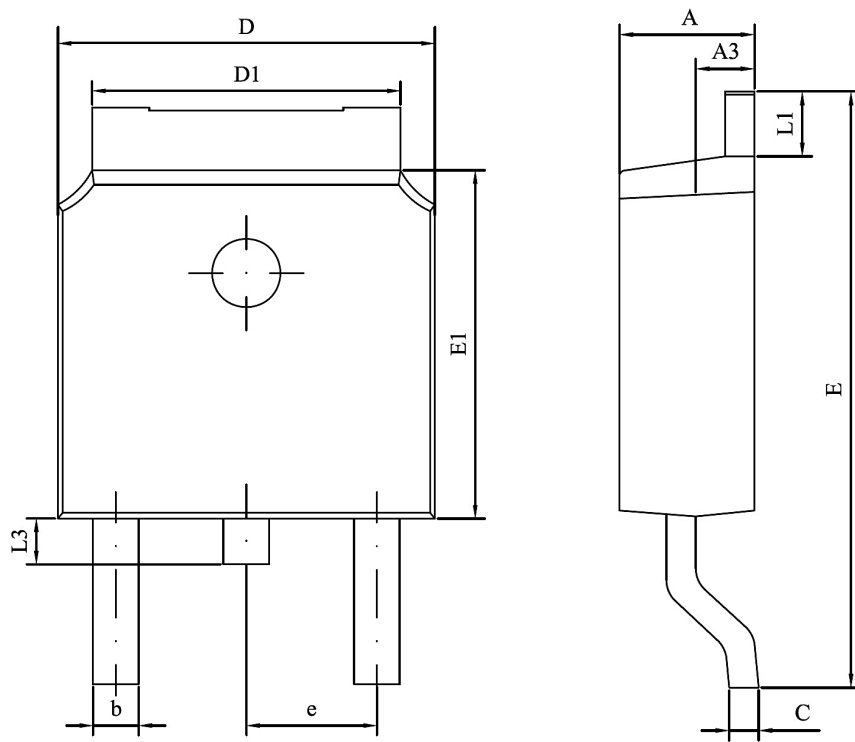


Figure 8. Safe Operation Area

Package Outline Dimensions (TO-252)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.150	2.400	0.085	0.094
A3	0.900	1.100	0.035	0.043
b	0.500	0.900	0.020	0.035
C	0.400	0.650	0.016	0.026
D	6.300	6.900	0.248	0.272
D1	4.950	5.500	0.195	0.217
E	9.400	10.410	0.370	0.410
E1	5.900	6.300	0.232	0.248
e	2.286 BSC		0.090 BSC	
L1	0.890	1.270	0.035	0.050
L3	0.600	1.100	0.024	0.043

Order Information

Device	Package	Marking	Carrier	Quantity
GSFD111P10	TO-252	D111P10	Tape & Reel	2,500 Pcs / Reel