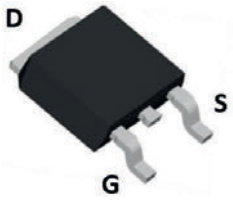
GOOD-ARK SEMICONDUCTOR

GSFD10110

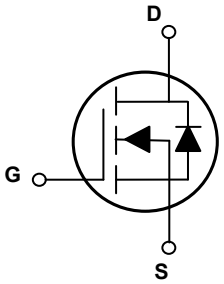
100V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	84mΩ (typ.)
I_D	15A



TO-252 (DPAK)



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 GSFD10110 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°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, @ Steady-State (T_A=25°C)[1]	I_D	15	A
Continuous Drain Current, @ Steady-State (T_A=100°C)		9.5	A
Pulsed Drain Current[2]	I_{DM}	60	A
Power Dissipation (T_A=25°C)	P_D	34	W
Linear Derating Factor (T_A=25°C)		0.19	W/°C
Single Pulse Avalanche Energy[3]	E_{AS}	11	mJ
Junction-to-Case	$R_{\theta JC}$	4.4	°C/W
Junction-to-Ambient (PCB Mounted, Steady-State)[4]	$R_{\theta JA}$	62	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	°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	-	-	1	μA
		T_J=125°C	-	-	50	
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=9A	-	84	106	mΩ
		V_{GS}=6V, I_D=3A	-	92	110	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.1	1.8	2.9	V
Forward Transconductance	gfs	V_{DS}=10V, I_D=5A	-	15	-	S
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, F=1MHz	-	446	-	pF
Output Capacitance	C_{oss}		-	57	-	
Reverse Transfer Capacitance	C_{rss}		-	2.8	-	
Total Gate Charge	Q_g	I_D=10A, V_{DS}=50V, V_{GS}=10V	-	8.2	-	nC
Gate-to-Source Charge	Q_{gs}		-	2.8	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	1.6	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=50V, R_L=5Ω, R_{GEN}=3Ω	-	2.6	-	nS
Rise Time	t_r		-	22	-	
Turn-Off Delay Time	$t_{d(off)}$		-	8.4	-	
Fall Time	t_f		-	12	-	
Gate Resistance	R_g	F=1MHz	-	1.4	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	15	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	60	A
Diode Forward Voltage	V_{SD}	I_S=10A, V_{GS}=0V	-	1	1.3	V
Reverse Recovery Time	T_{rr}	I_S=10A, V_{GS}=0V, dI_F/dt=100A/us	-	46	-	nS
Reverse Recovery Charge	Q_{rr}		-	40	-	nC

Note:

1. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. L=0.5mH, R_G=25Ω, V_{DD}=80V, I_{AS}=6.5A, T_J=25°C.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

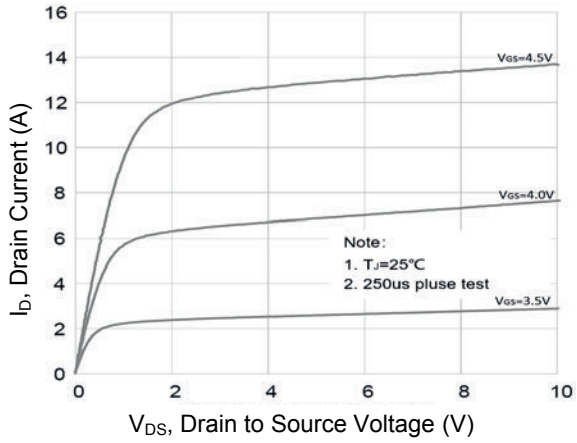


Figure 1. Typical Output Characteristics

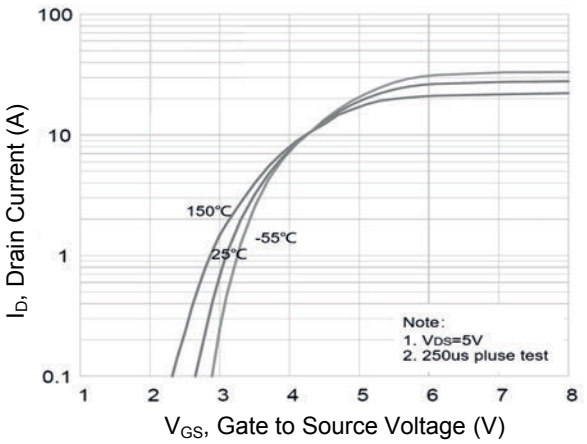


Figure 2. Transfer Characteristics

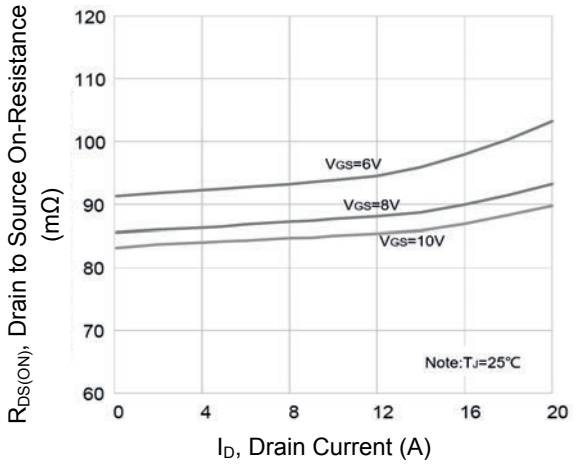


Figure 3. $R_{DS(ON)}$ vs. Drain Current

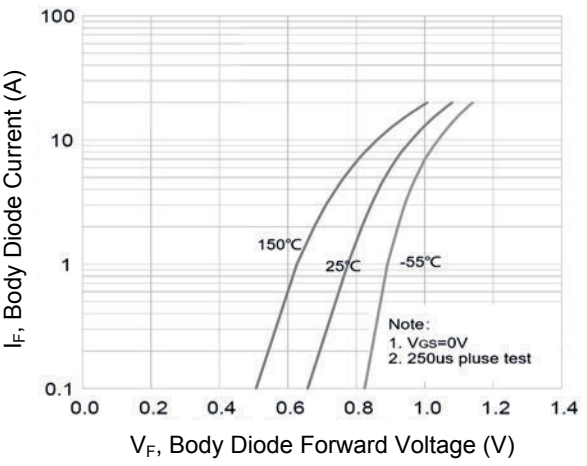


Figure 4. Body Diode Characteristics

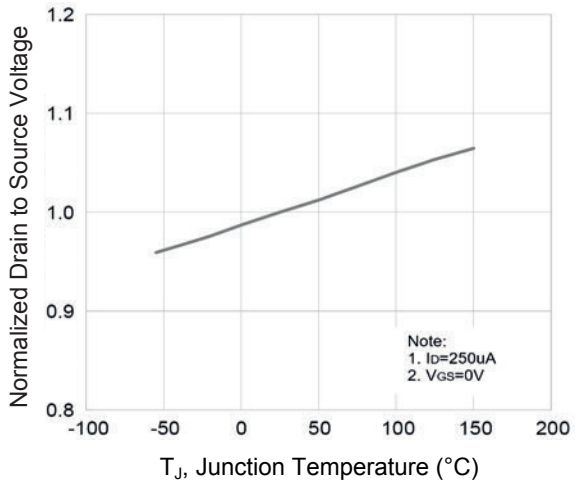


Figure 5. Normalized BV_{DSS} vs. T_J

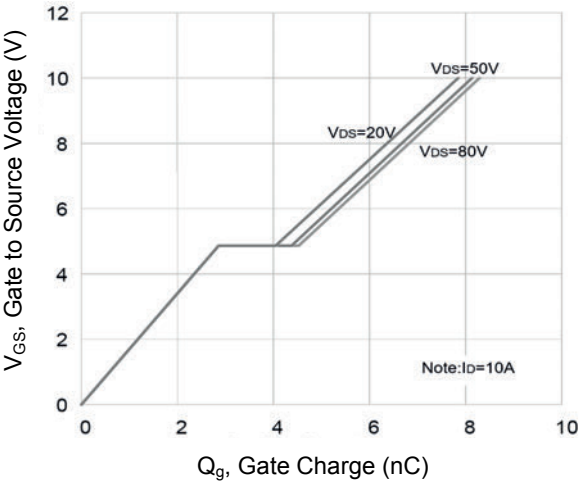


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

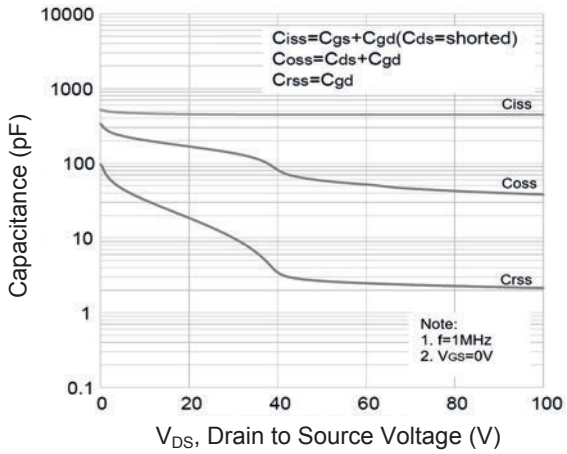


Figure 7. Capacitance Characteristics

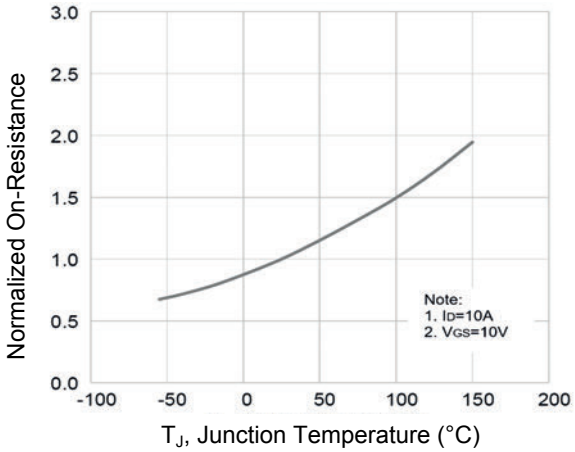


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

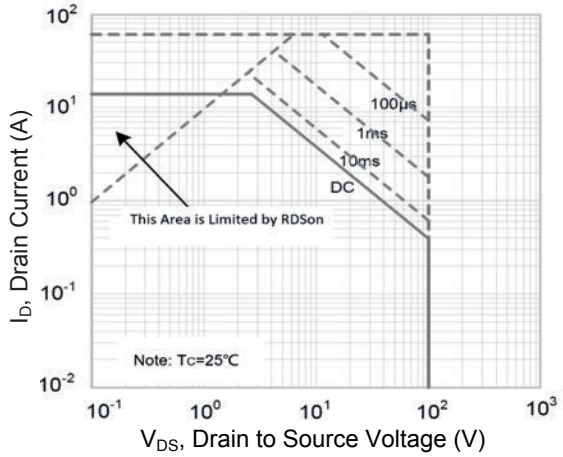
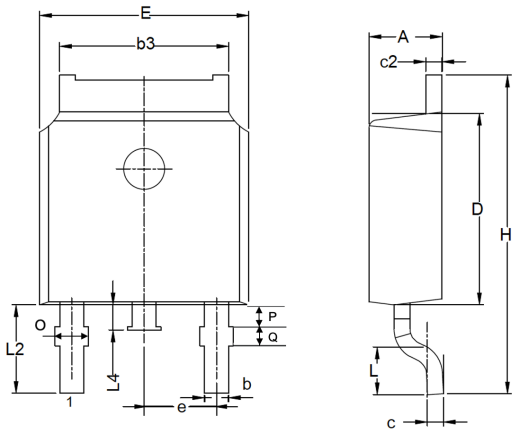


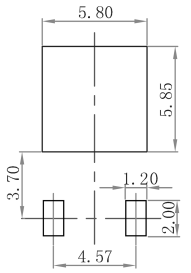
Figure 9. Safe Operation Area

Package Outline Dimensions TO-252(DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	2.500	0.055	0.098
b	0.500	0.900	0.020	0.035
b3	5.100	5.500	0.201	0.217
c	0.400	0.650	0.016	0.026
c2	0.460	0.580	0.018	0.023
D	5.400	6.400	0.213	0.252
E	6.300	6.900	0.248	0.272
e	2.186	2.386	0.086	0.094
H	9.400	10.300	0.370	0.406
L	1.390	1.770	0.055	0.070
L4	0.600	1.100	0.024	0.043
L2	2.850 REF		0.112 REF	
O	0.780	1.100	0.031	0.043
P	0.600 REF		0.024 REF	
Q	0.500 REF		0.020 REF	

Recommended Pad Layout



unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFD10110	TO-252(DPAK)	D10110	Tape & Reel	2,500 Pcs / Reel