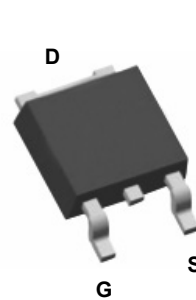
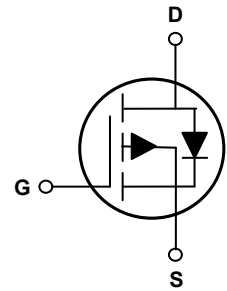


Main Product Characteristics

$V_{(BR)DSS}$	-40V
$R_{DS(ON)}$	11m Ω (Max.)
I_D	-60A



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 GSFD4011 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	Max.	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^\circ\text{C}$), $V_{GS}=10\text{V}^1$	I_D	-60	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$), $V_{GS}=10\text{V}^1$		-36	A
Drain Current-Pulsed ²	I_{DM}	-240	A
Pulsed Source Current (Body Diode) ²	I_{SM}	-240	A
Maximum Power Dissipation ($T_C=25^\circ\text{C}$) ³	P_D	93	W
Single Pulse Avalanche Energy ($L=0.3\text{mH}$)	E_{AS}	361	mJ
Single Pulse Avalanche Current ($L=0.3\text{mH}$)	I_{AS}	38	A
Junction-to-Ambient ($t \leq 10\text{s}$) ⁴	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Maximum Junction-to-Case ⁵	$R_{\theta JC}$	1.61	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 To +175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +175	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	-	-	-1	μA
Drain-to-Source Leakage Current		$V_{DS}=-40V, V_{GS}=0V, T_J=125^\circ C$	-	-	-50	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.1	-1.7	-2.8	V
Drain Static-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$	-	8.0	11	m Ω
		$V_{GS}=-4.5V, I_D=-20A$	-	11	15	m Ω
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	$V_{DD}=-20V, I_D=-10A, V_{GS}=-10V$	-	59	-	nC
Gate-Source Charge	Q_{gs}		-	8.5	-	
Gate-Drain Charge	Q_{gd}		-	13.7	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-20V, R_G=3\Omega, R_L=2.0\Omega, V_{GS}=-10V, I_D=-10A$	-	17	-	nS
Rise Time	t_r		-	41	-	
Turn-Off Delay Time	$t_{d(off)}$		-	170	-	
Fall Time	t_f		-	99	-	
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V, F=1MHz$	-	3660	-	pF
Output Capacitance	C_{oss}		-	317	-	
Reverse Transfer Capacitance	C_{rss}		-	226	-	
Gate Resitance	R_g	$F=1MHz$	-	10	-	Ω
Source-Drain Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	-60	A
Maximum Body-Diode Pulse Current	I_{SM}		-	-	-240	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-20A, T_J=25^\circ C$	-	-1.05	-1.4	V
Reverse Recovery Time	t_{rr}	$I_F=-10A, di/dt=100A/\mu s, T_J=25^\circ C$	-	14.5	-	nS
Reverse Recovery Charge	Q_{rr}		-	4.6	-	nC

Notes:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1inch² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$.

Typical Electrical and Thermal Characteristic Curves

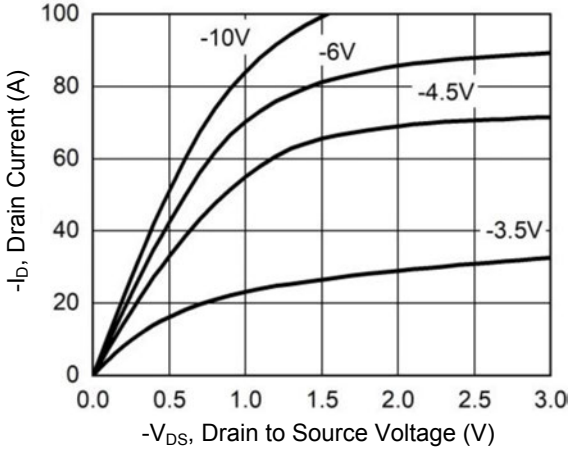


Figure 1. Output Characteristics

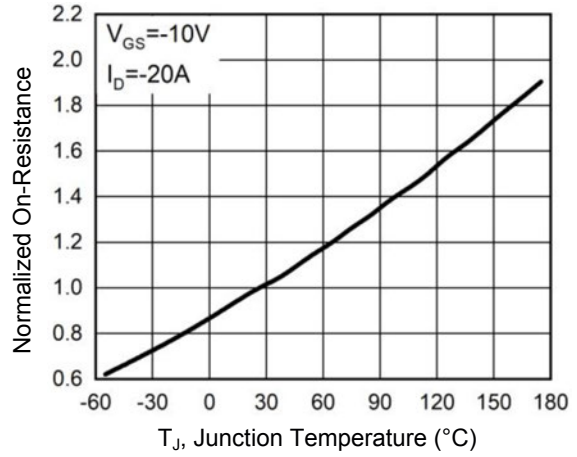


Figure 2. Normalized $R_{DS(ON)}$ Vs. T_J

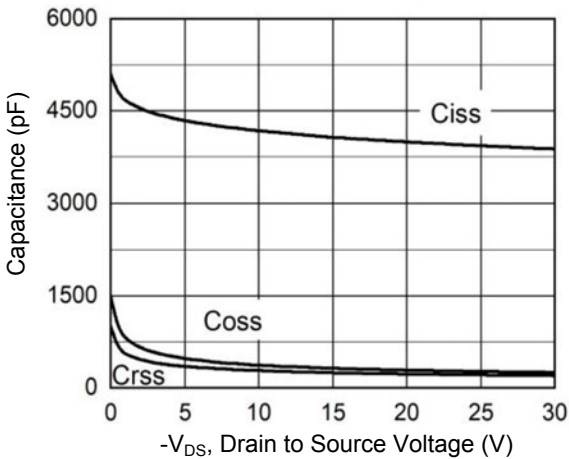


Figure 3. Capacitance Characteristics

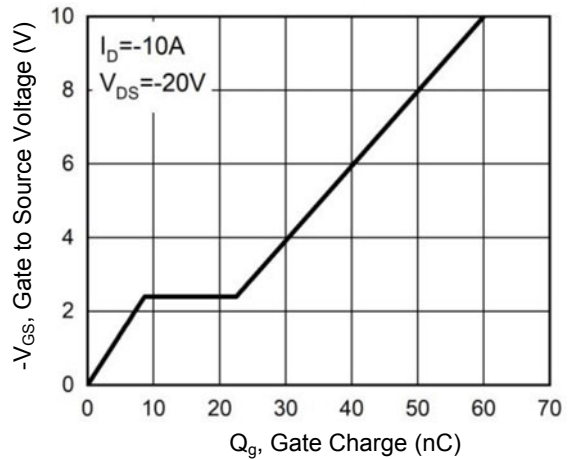


Figure 4. Gate Charge Waveform

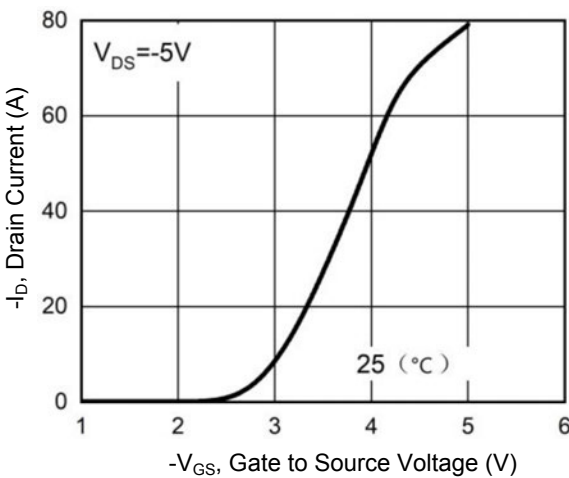


Figure 5. Transfer Characteristics

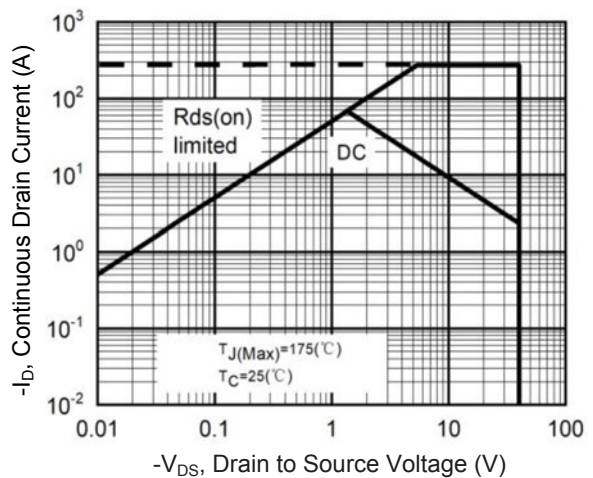
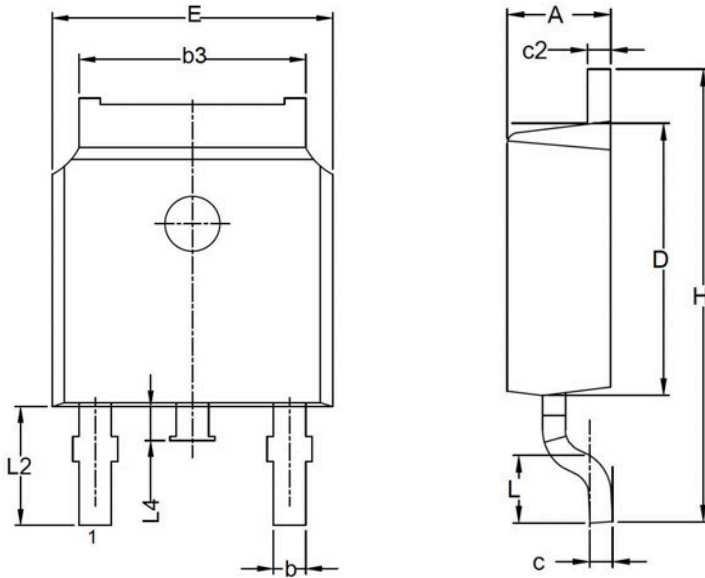


Figure 6. Maximum Safe Operation Area

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	2.850REF		0.112REF	

Order Information

Device	Package	Marking	Carrier	Quantity
GSFD4011	TO-252 (DPAK)	D4011	Tape & Reel	2,500pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com