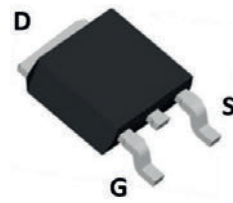
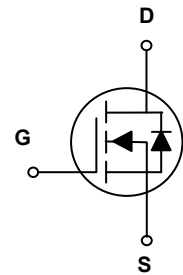


Main Product Characteristics

$V_{(BR)DSS}$	120V
$R_{DS(ON)}$	15m Ω (Max.)
I_D	65A



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 GSFD15012 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_{DS}	120	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$) ¹	I_D	65	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		44	A
Pulsed Drain Current ²	I_{DM}	242	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	96	W
Linear Derating Factor ($T_C=25^\circ\text{C}$)		0.64	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	127	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.56	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62.0	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	120	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=120V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^\circ\text{C}$	-	-	20	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	11.5	15	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	14	19	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.1	-	2.6	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=60V, f=1MHz$	-	2090	-	pF
Output Capacitance	C_{oss}		-	565	-	
Reverse Transfer Capacitance	C_{rss}		-	4	-	
Total Gate Charge	Q_g	$I_D=30A, V_{DS}=60V, V_{GS}=10V$	-	27	-	nC
Gate-to-Source Charge	Q_{gs}		-	5	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	6.3	-	
Turn-On Delay Time	$T_{d(on)}$	$V_{GS}=10V, V_{DS}=60V, I_D=30A, R_{GEN}=3\Omega$	-	19	-	nS
Rise Time	T_r		-	8	-	
Turn-Off Delay Time	$T_{d(off)}$		-	72	-	
Fall Time	T_f		-	94	-	
Gate Resistance	R_g	$f=1MHz$	-	2.4	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	65	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	242	A
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	1.0	1.3	V
Reverse Recovery Time	t_{rr}	$T_J=25^\circ\text{C}, I_F=30A, di/dt=100A/\mu s$	-	52	-	nS
Reverse Recovery Charge	Q_{rr}		-	110	-	nC

Notes:

1. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5mH, V_{DD}=60V, I_{AS}=22.5A, R_G=25\Omega, T_J=25^\circ\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

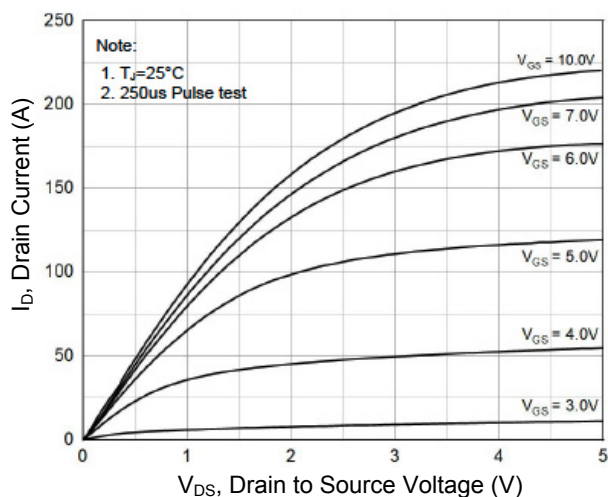


Figure 1. Output Characteristics

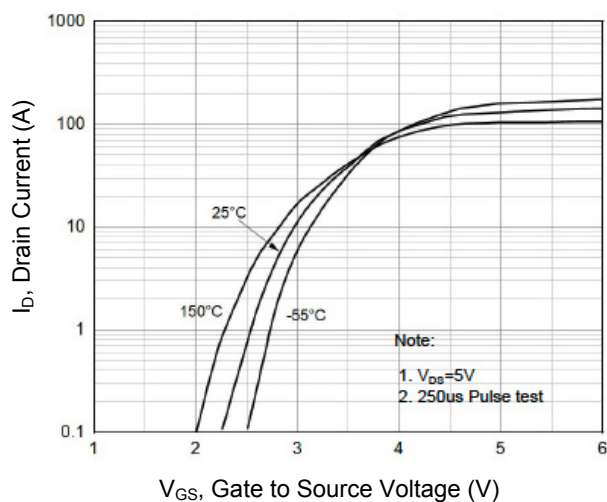


Figure 2. Transfer Characteristics

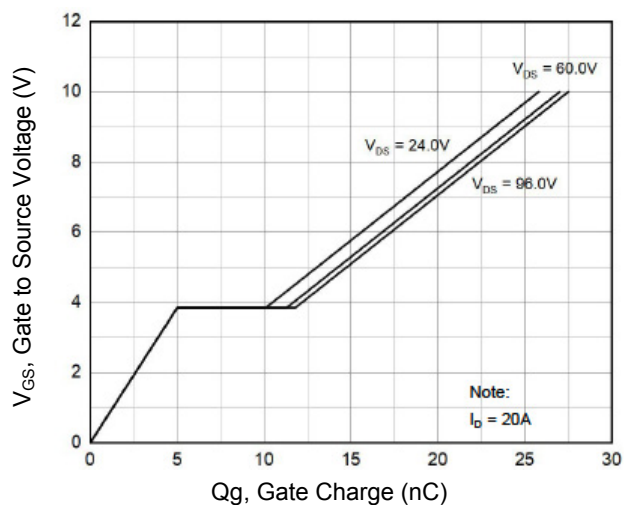


Figure 3. Gate Charge

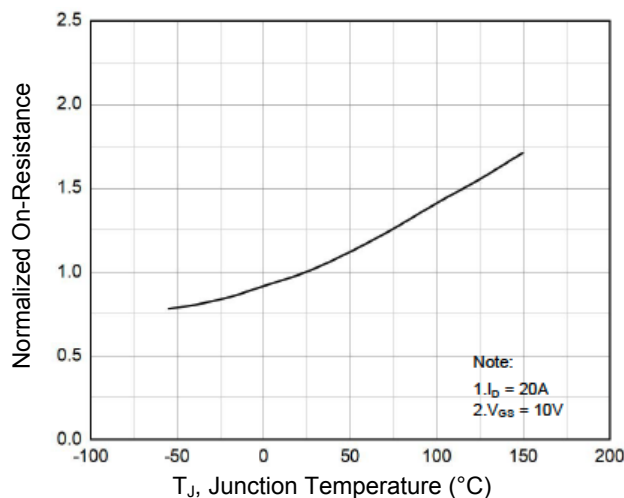


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

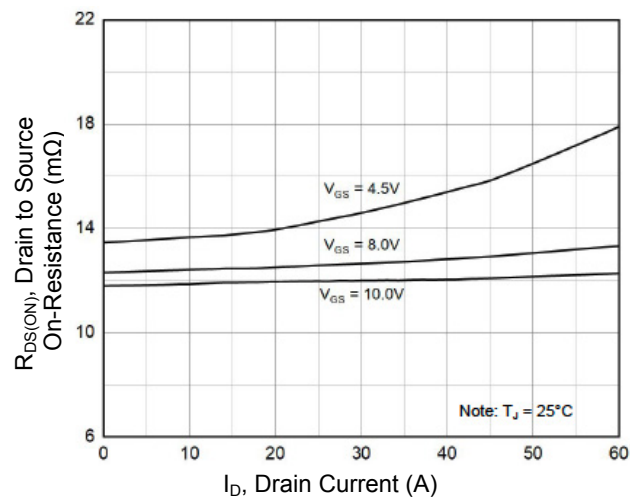


Figure 5. On-Resistance vs. Drain Current

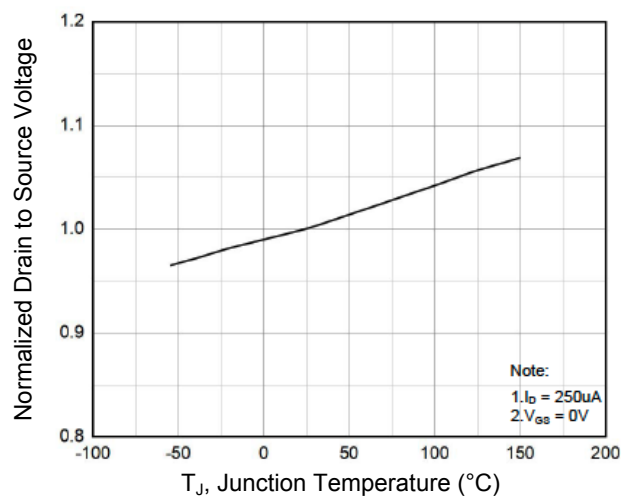


Figure 6. Normalized BV_{DS} vs. T_J

Typical Electrical and Thermal Characteristic Curves

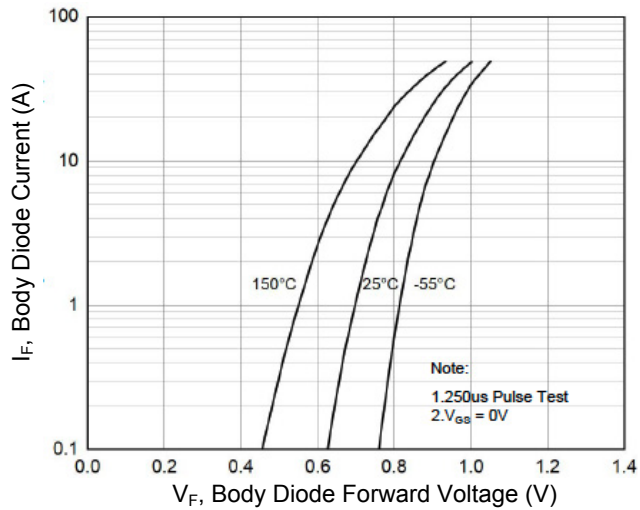


Figure 7. Body Diode Characteristics

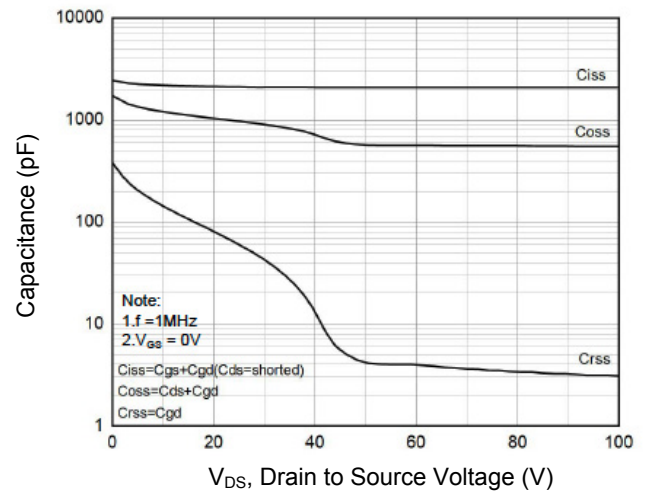


Figure 8. Capacitance Characteristics

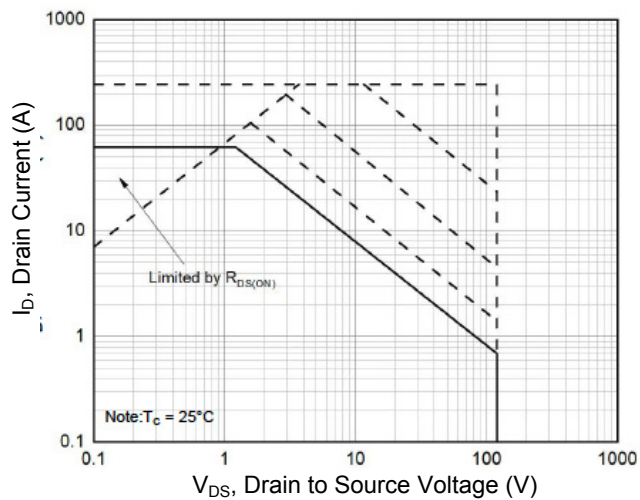
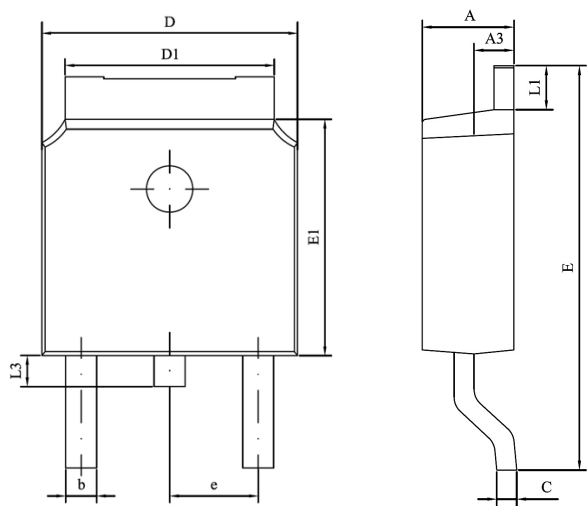


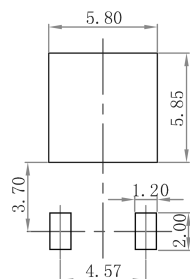
Figure 9. Safe Operation Area

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

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFD15012	TO-252	D15012	Tape & Reel	2,500 Pcs / Reel

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