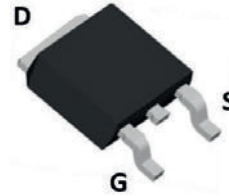
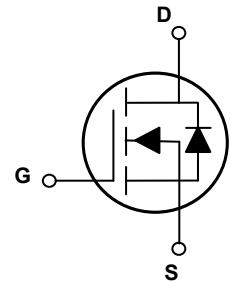


Main Product Characteristics

$V_{(BR)DSS}$	250V
$R_{DS(ON)}$	0.28Ω (Max.)
I_D	14A



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 GSFD2514 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	Parameter	Unit
Drain-Source Voltage	V_{DS}	250	V
Gate-to-Source Voltage	V_{GS}	±30	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	14	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		9.0	A
Pulsed Drain Current ¹	I_{DM}	56	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	88	W
		0.71	W/°C
Single Pulse Avalanche Energy	E_{AS}	240	mJ
Body Diode Reverse Voltage Slop	dv/dt	4.5	V/ns
MOS dv/dt Ruggedness	dv/dt	50	V/ns
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62	°C/W
Junction-to-Case	$R_{\theta JC}$	1.42	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C
Maximum Lead Temperature for Soldering Purposes	T_L	260	°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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	250	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=250V, V_{GS}=0V, T_C=25^\circ\text{C}$	-	-	1.0	μA
		$V_{DS}=200V, T_C=125^\circ\text{C}$	-	-	100	μA
Gate-to-Source Forward Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
		$V_{DS}=0V, V_{GS}=-30V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=7A$	-	0.224	0.28	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	-	4.6	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V, f=1\text{MHz}$	-	673	-	pF
Output Capacitance	C_{oss}		-	107	-	
Reverse Transfer Capacitance	C_{rss}		-	13	-	
Total Gate Charge ^{2,3}	Q_g	$I_D=14A, V_{DS}=200V, V_{GS}=10V$	-	18	-	nC
Gate-to-Source Charge ^{2,3}	Q_{gs}		-	7.8	-	
Gate-to-Drain ("Miller") Charge ^{2,3}	Q_{gd}		-	7.5	-	
Turn-on Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=125V, V_{GS}=10V, R_G=25\Omega, I_D=14A$	-	15	-	nS
Rise Time ^{2,3}	t_r		-	61	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	25	-	
Fall Time ^{2,3}	t_f		-	26	-	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$	-	3.1	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	$T_C=25^\circ\text{C}$, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	14	A
Diode Pulse Current	I_{SM}		-	-	56	A
Diode Forward Voltage	V_{SD}	$I_S=4.0A, V_{GS}=0V$	-	-	1.3	V
Reverse Recovery Time	T_{rr}	$I_S=14A, V_{GS}=0V, di_f/dt=100A/\mu s$	-	203	-	nS
Reverse Recovery Charge	Q_{rr}		-	1.5	-	μC

Notes:

1. Pulse width limited by maximum junction temperature.
2. Pulse test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

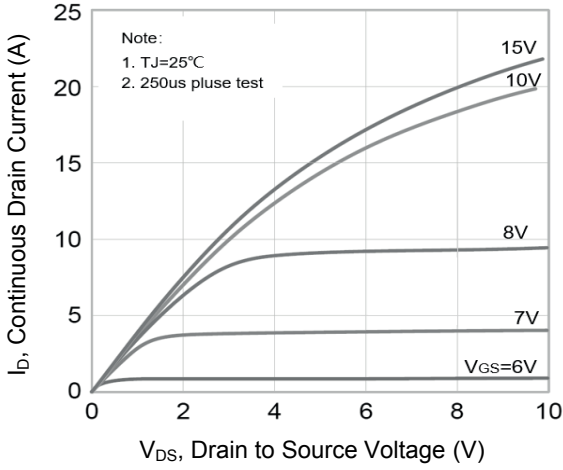


Figure 1. Output Characteristics

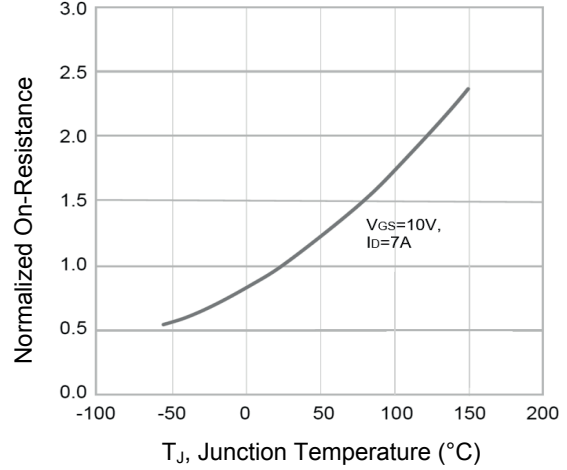


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

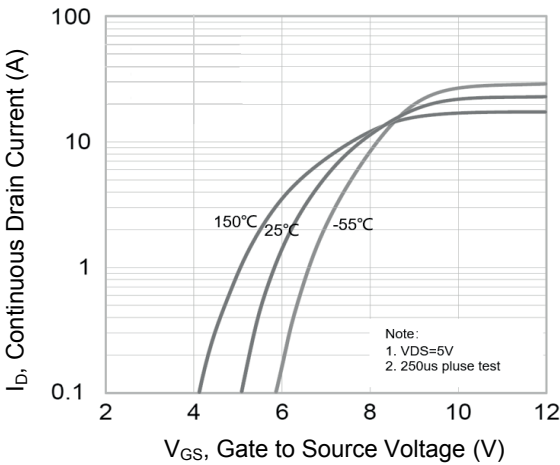


Figure 3. Transfer Characteristics

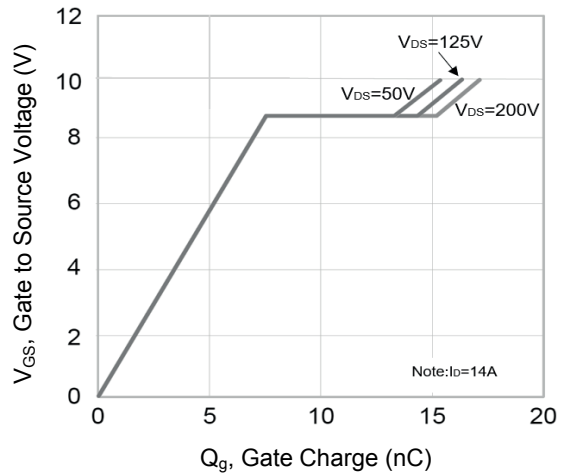


Figure 4. Gate Charge Waveform

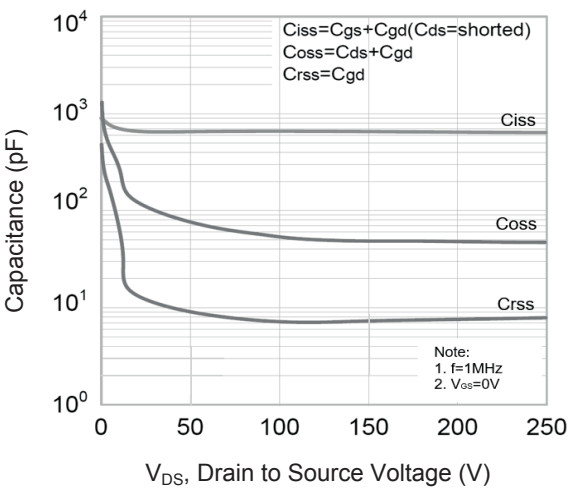


Figure 5. Capacitance Characteristics

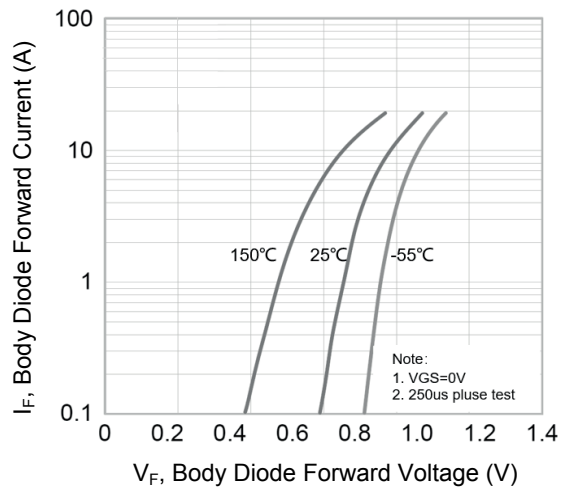
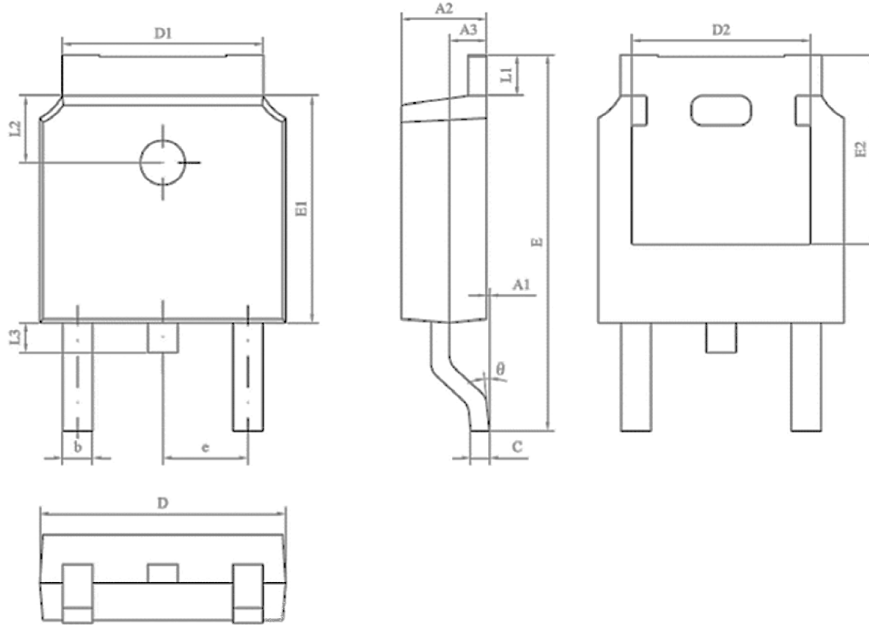


Figure 6. Body Diode Characteristics

Package Outline Dimensions TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A1	0.00	0.10	0.000	0.004
A2	2.20	2.40	0.087	0.094
A3	0.09	1.10	0.004	0.043
b	0.75	0.85	0.030	0.033
C	0.50	0.60	0.020	0.024
D	6.50	6.70	0.256	0.264
D1	5.30	5.50	0.209	0.217
D2	4.70	4.90	0.185	0.193
E	9.90	10.30	0.390	0.406
E1	6.00	6.20	0.236	0.244
E2	5.00	5.20	0.197	0.205
e	2.20	2.40	0.087	0.094
L1	0.90	1.25	0.035	0.049
L2	1.70	1.90	0.067	0.075
L3	0.60	1.00	0.024	0.039
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Carrier	Quantity
GSFD2514	TO-252 (DPAK)	D2514	Tape & Reel	2,500pcs / Reel