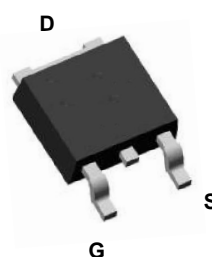
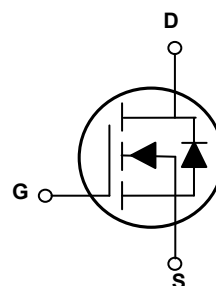


Main Product Characteristics

BV_{DSS}	800V
$R_{DS(ON)}$	4.8Ω (Max.)
I_D	3A



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 GSFD8003 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	$V_{(BR)DSS}$	800	V
Gate-Source Voltage	V_{GS}	±30	V
Drain Current-Continuous, @ Steady-State ($T_C=25^{\circ}\text{C}$)	I_D	3	A
Drain Current-Continuous, @ Steady-State ($T_C=100^{\circ}\text{C}$)		1.9	
Drain Current-Pulsed	I_{DM}	12	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	80	W
Linear Derating Factor ($T_C=25^{\circ}\text{C}$)		0.64	
Single Pulse Avalanche Energy ¹	E_{AS}	173	mJ
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Junction-to-Case	$R_{\theta JC}$	1.56	$^{\circ}\text{C/W}$
Maximum Junction Temperature	T_J	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	800	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =800V, V _{GS} =0V	-	-	1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =1.5A	-	3.8	4.8	Ω
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	2	-	4	V
Gate Resistance	R _G	F=1MHz	-	4.5	-	Ω
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DD} =640V, I _D =3A, V _{GS} =10V	-	9	-	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	2.46	-	
Gate-to-Drain ("Miller") Charge ^{2,3}	Q _{gd}		-	3.74	-	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =400V, R _G =25Ω, V _{GS} =10V, I _D =3A	-	13.87	-	nS
Rise Time ^{2,3}	t _r		-	30.53	-	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	22.40	-	
Fall Time ^{2,3}	t _f		-	18.27	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, F=1MHz	-	390.5	-	pF
Output Capacitance	C _{oss}		-	42.5	-	
Reverse Transfer Capacitance	C _{rss}		-	2	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I _S	T _C =25°C, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	3	A
Diode Pulse Current	I _{SM}		-	-	12	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =3A	-	-	1.4	V
Reverse Recovery Time	T _{rr}	I _F =3A, V _{GS} =0V, di/dt=100A/μs	-	437	-	nS
Reverse Recovery Charge	Q _{rr}		-	1.68	-	uC

Note:

1. $L=30mH, I_{AS}=3.15A, V_{DD}=100V, R_G=25\Omega$, starting temperature $T_J=25^{\circ}\text{C}$.
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

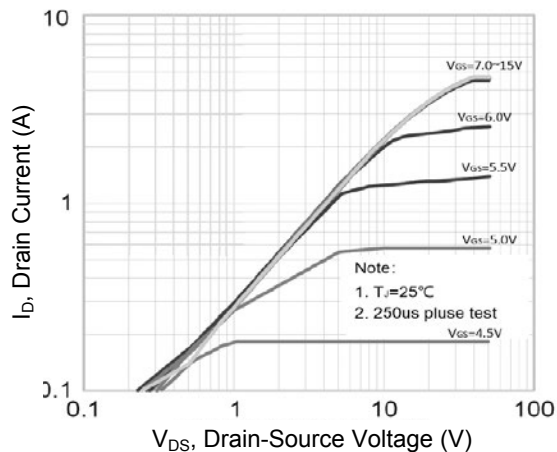


Figure 1. Output Characteristics

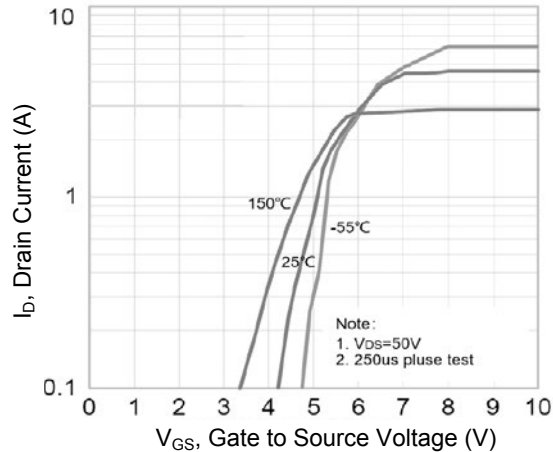


Figure 2. Transfer Characteristics

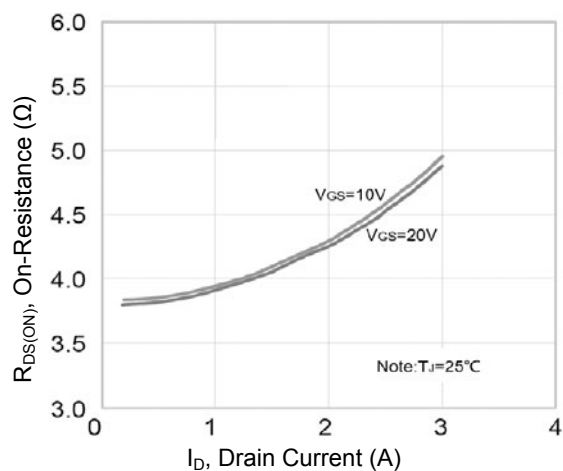


Figure 3. $R_{DS(ON)}$ vs. Drain Current

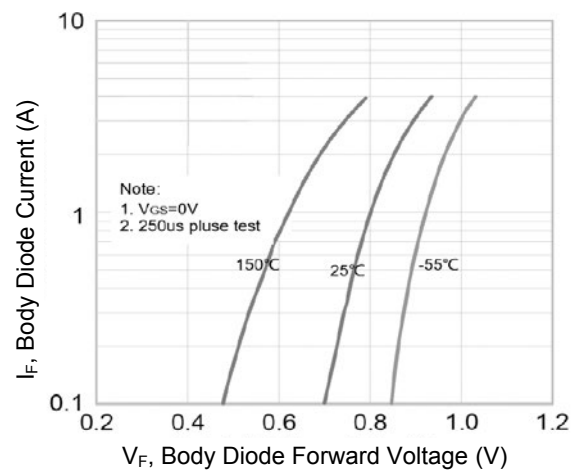


Figure 4. Body Diode Characteristic

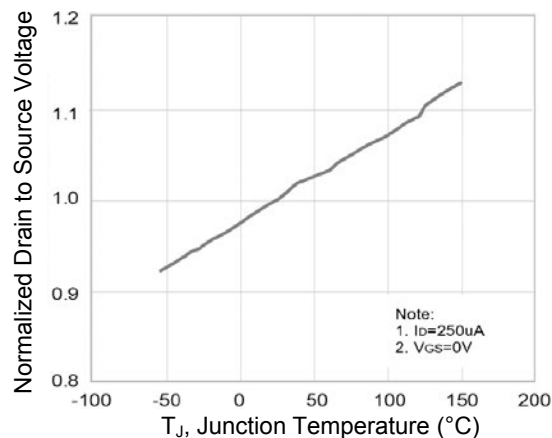


Figure 5. Normalized BV_{DS} vs. T_J

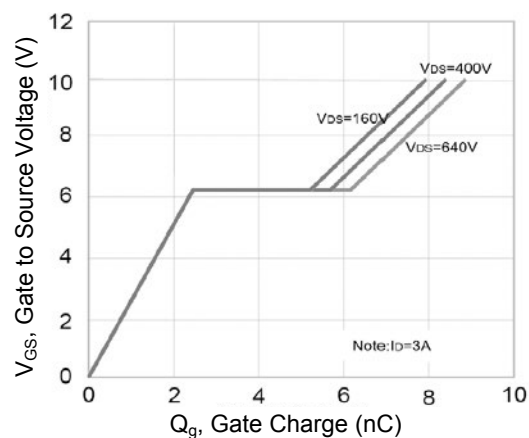


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

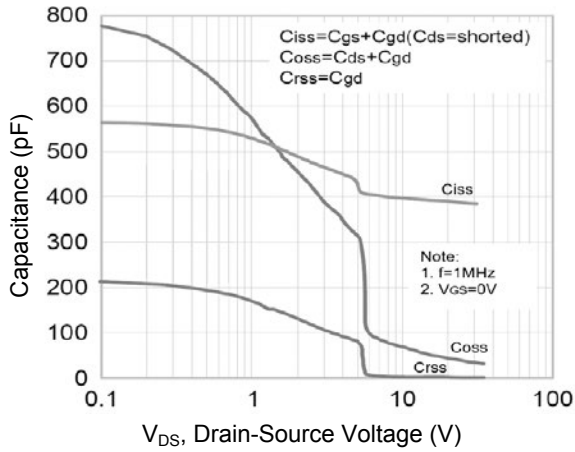


Figure 7. Capacitance Characteristic

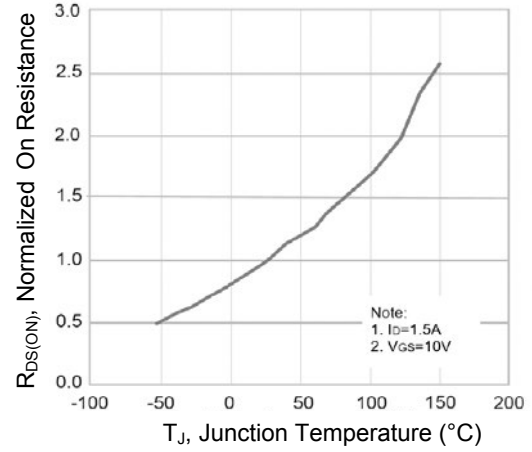


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

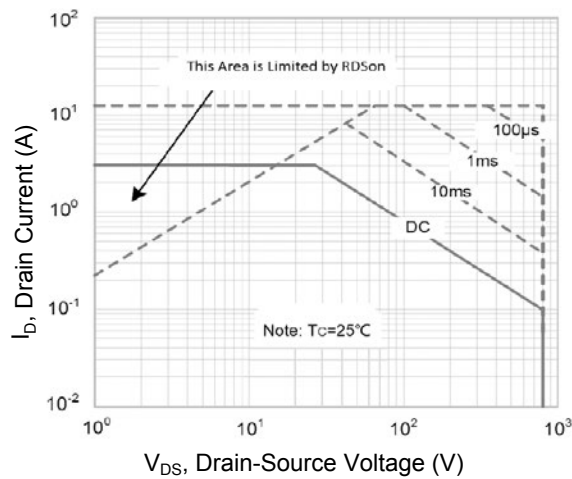
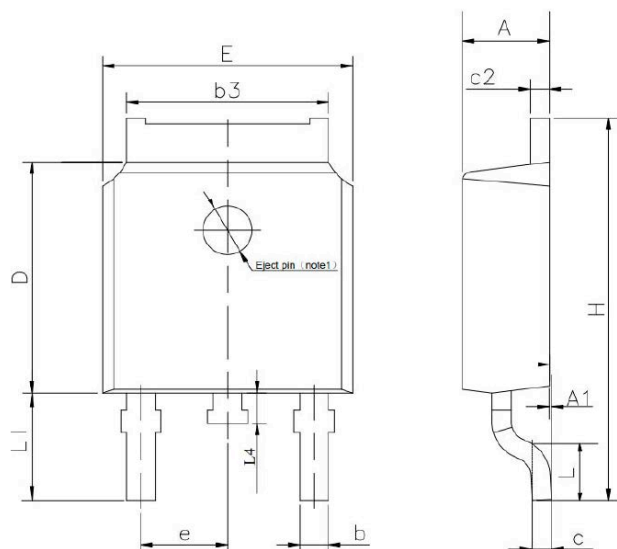


Figure 9. Safe Operation Area

Package Outline Dimensions TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.100	2.500	0.083	0.098
A1	0.000	0.127	0.000	0.005
b	0.660	0.890	0.026	0.035
b3	5.100	5.460	0.201	0.215
c	0.450	0.650	0.018	0.026
c2	0.450	0.650	0.018	0.026
D	5.800	6.400	0.228	0.252
E	6.300	6.900	0.248	0.272
e	2.300 TYP		0.091 TYP	
H	9.600	10.600	0.378	0.417
L	1.400	1.700	0.055	0.067
L1	2.900 REF		0.114 REF	
L4	0.600	1.000	0.024	0.039