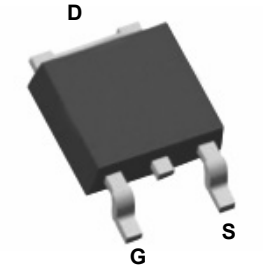
GOOD-ARK
SEMICONDUCTOR

GSFD6959

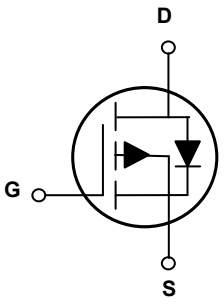
60V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	12mΩ
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 GSFD6959 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°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_C=25°C)	I_D	-60	A
Drain Current-Continuous (T_C=100°C)		-38	
Drain Current-Pulsed[1]	I_{DM}	-240	A
Single Pulse Avalanche Energy[2]	E_{AS}	296	mJ
Single Pulse Avalanche Current[2]	I_{AS}	-77	A
Power Dissipation (T_C=25°C)	P_D	102	W
Power Dissipation-Derate above 25°C		0.81	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.23	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics (T_J=25°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=-250uA	-60	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-60V, V_{GS}=0V, T_J=25°C	-	-	-1	μA
		V_{DS}=-48V, V_{GS}=0V, T_J=125°C	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-25A	-	10	12	mΩ
		V_{GS}=-4.5V, I_D=-12A	-	12.3	16	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250uA	-1.2	-1.6	-2.5	V
Forward Transconductance	g_{fs}	V_{DS}=-10V, I_D=-3A	-	16	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[3]	Q_g	V_{DS}=-30V, I_D=-30A V_{GS}=-10V	-	106	160	nC
Gate-Source Charge[3]	Q_{gs}		-	18	30	
Gate-Drain Charge[3]	Q_{gd}		-	8.8	15	
Turn-On Delay Time[3]	$t_{d(on)}$	V_{DD}=-30V, R_G=6Ω V_{GS}=-10V, I_D=-30A	-	15	25	nS
Rise Time[3]	t_r		-	20	30	
Turn-Off Delay Time[3]	$t_{d(off)}$		-	40	60	
Fall Time[3]	t_f		-	50	75	
Input Capacitance[3]	C_{lss}	V_{DS}=-30V, V_{GS}=0V, F=1MHz	-	5600	8400	pF
Output Capacitance[3]	C_{oss}		-	300	450	
Reverse Transfer Capacitance[3]	C_{rss}		-	250	380	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	-60	A
Pulsed Source Current	I_{SM}		-	-	-120	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-1A, T_J=25°C	-	-	-1	V
Reverse Recovery Time	T_{rr}	V_R=-50V, I_S=-10A dI/dt=100A/μs, T_J=25°C	-	50	-	ns
Reverse Recovery Charge	Q_{rr}		-	45	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-77A, R_G=25Ω, Starting T_J=25°C.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

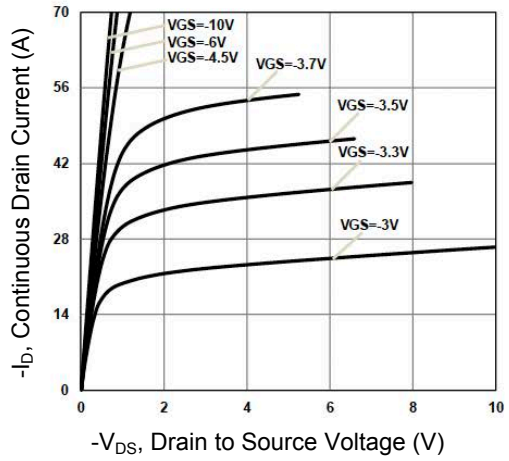


Figure 1. Typical Output Characteristics

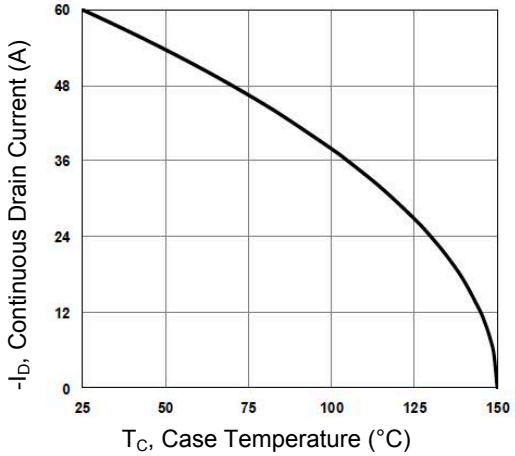


Figure 2. Continuous Drain Current vs. T_C

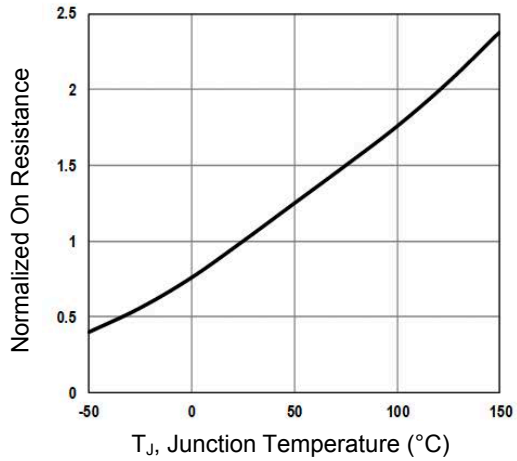


Figure 3. Normalized R_{DSON} vs. T_J

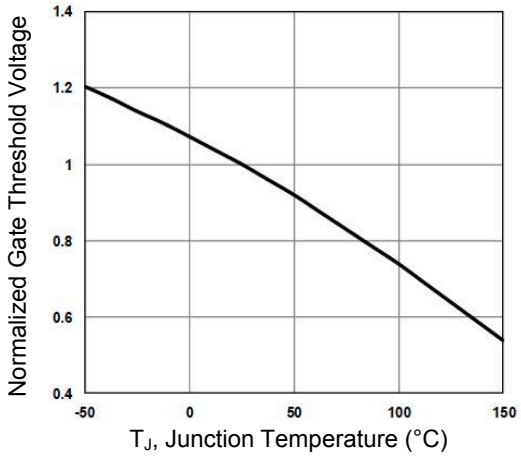


Figure 4. Normalized V_{th} vs. T_J

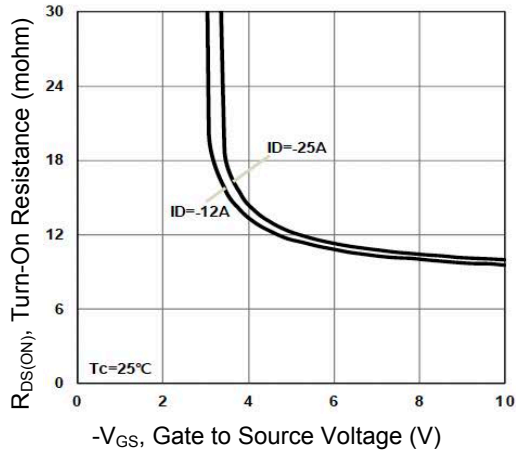


Figure 5. Turn-On Resistance vs. V_{GS}

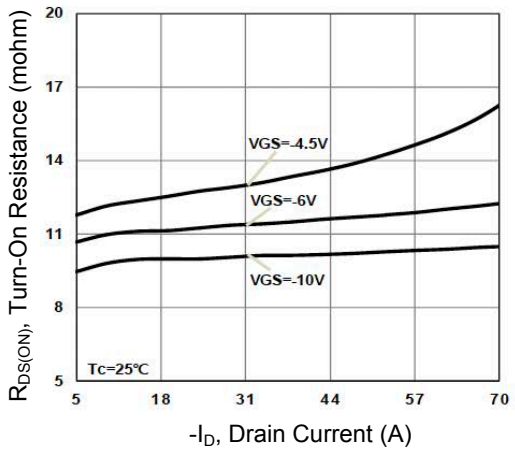


Figure 6. Turn-on Resistance vs. I_D

Typical Electrical and Thermal Characteristic Curves

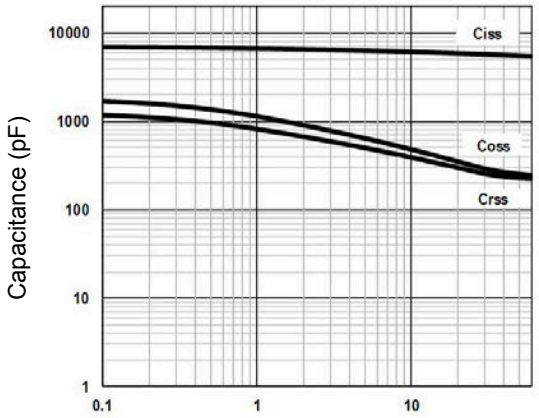


Figure 7. Capacitance Characteristics

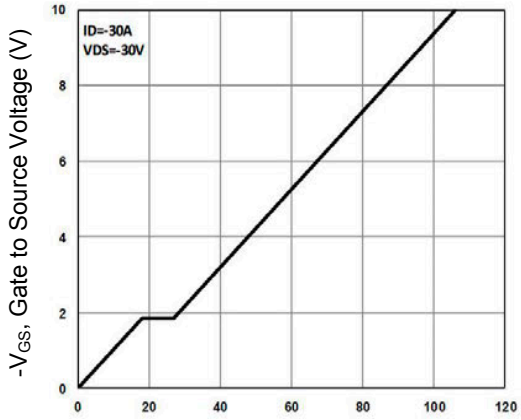


Figure 8. Gate Charge Characteristics

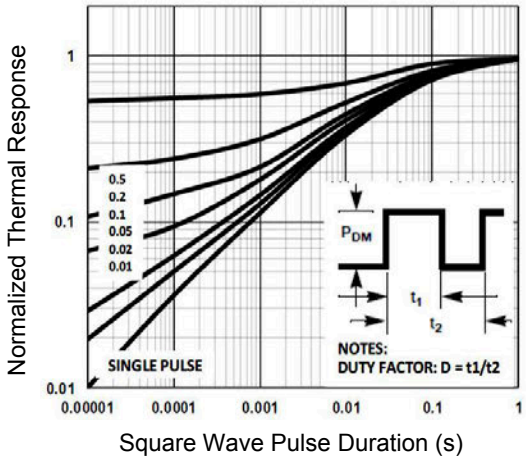


Figure 9. Normalized Transient Impedance

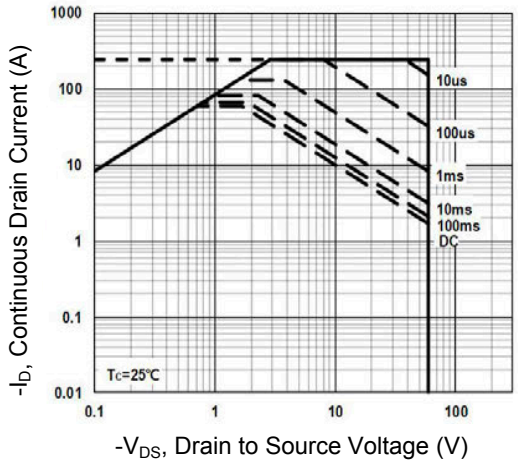


Figure 10. Maximum Safe Operation Area

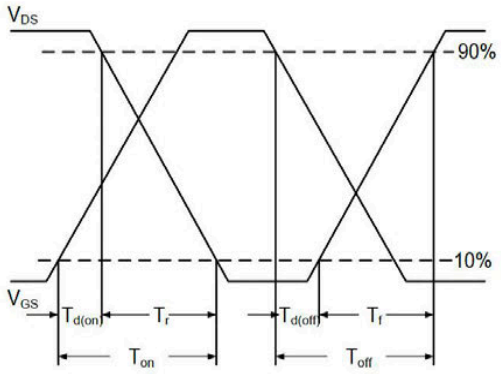


Figure 11. Switching Time Waveform

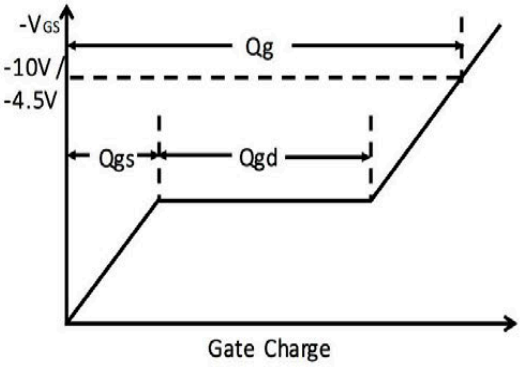
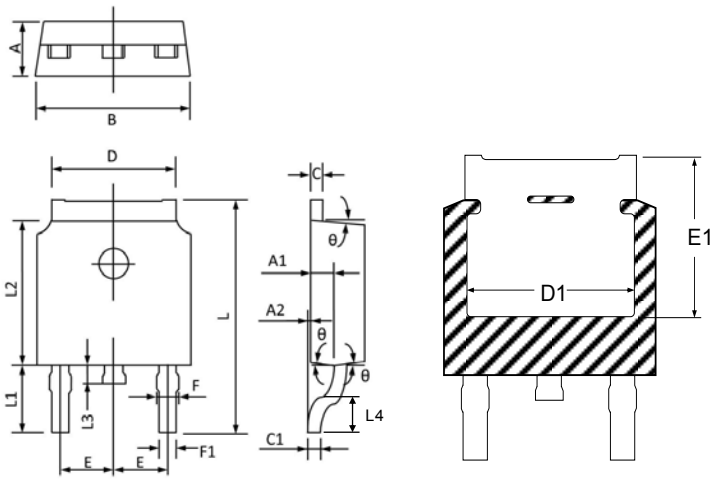


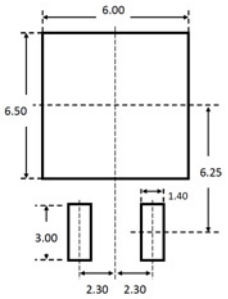
Figure 12. Gate Charge Waveform

Package Outline Dimensions TO-252 (DPAK)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.150	2.450	0.085	0.096
A1	0.900	1.200	0.035	0.047
A2	0.000	0.250	0.000	0.010
B	6.300	6.800	0.248	0.268
C	0.350	0.600	0.014	0.024
C1	0.380	0.600	0.015	0.024
D	5.100	5.500	0.201	0.217
D1	4.950	5.400	0.195	0.212
E	2.000	2.400	0.079	0.094
E1	4.950	5.650	0.194	0.222
F	0.600	1.150	0.024	0.045
F1	0.500	0.900	0.020	0.035
L	9.400	10.400	0.370	0.409
L1	2.400	3.100	0.094	0.122
L2	5.300	6.300	0.209	0.248
L3	0.600	1.200	0.024	0.047
L4	1.400	1.800	0.055	0.071
θ	3°	9°	3°	9°

Recommended Pad Layout



unit : mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFD6959	TO-252 (DPAK)	DD6959	Tape & Reel	2,500pcs / Reel

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