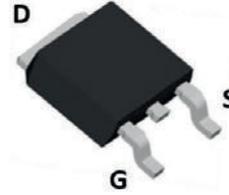
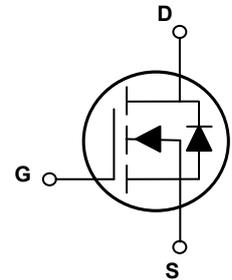


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	19m Ω (Max.)
I_D	45A



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

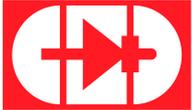


Description

The GSFD19010 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}	100	V
Gate-to-Source Voltage	V _{GS}	±20	V
Continuous Drain Current, @ Steady-State (T _C =25°C) ¹	I _D	45	A
Continuous Drain Current, @ Steady-State (T _C =100°C)		32	A
Pulsed Drain Current ²	I _{DM}	180	A
Power Dissipation (T _C =25°C)	P _D	60	W
Linear Derating Factor (T _C =25°C)		0.48	W/°C
Single Pulse Avalanche Energy ³	E _{AS}	81	mJ
Junction-to-Case	R _{θJC}	2.1	°C/W
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	R _{θJA}	62	°C/W
Operating Junction and Storage Temperature Range	T _J /T _{STG}	-55 to +150	°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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
		$T_J=125^\circ C$	-	-	20	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=33A$	-	15	19	m Ω
		$V_{GS}=6V, I_D=16A$	-	19	34	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.1	3.0	3.8	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V$ $F=1MHz$	-	1355	-	μF
Output Capacitance	C_{oss}		-	171	-	
Reverse Transfer Capacitance	C_{rss}		-	4	-	
Total Gate Charge	Q_g	$I_D=33A, V_{DS}=50V,$ $V_{GS}=10V$	-	23	-	nC
Gate-to-Source Charge	Q_{gs}		-	10	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	4.9	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V,$ $I_D=33A, R_{GEN}=2\Omega$	-	8.4	-	nS
Rise Time	t_r		-	28.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	22.4	-	
Fall Time	t_f		-	7.8	-	
Gate Resistance	R_g	$F=1MHz$	-	2.2	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	45	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	180	A
Diode Forward Voltage	V_{SD}	$I_S=45A, V_{GS}=0V$	-	1.0	1.2	V
Reverse Recovery Time	T_{rr}	$T_J=25^\circ C, I_F=45A,$ $di/dt=100A/\mu s$	-	56	-	ns
Reverse Recovery Charge	Q_{rr}		-	0.09	-	μc

Note:

1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5mH, V_{DD}=80V, I_{AS}=18A, R_G=25\Omega, T_J=25^\circ C$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

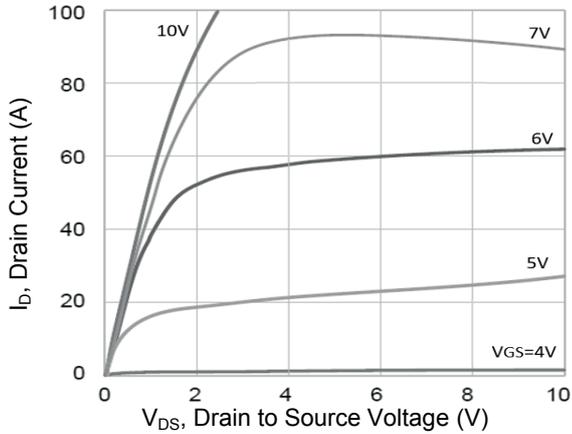


Figure 1. Output Characteristics

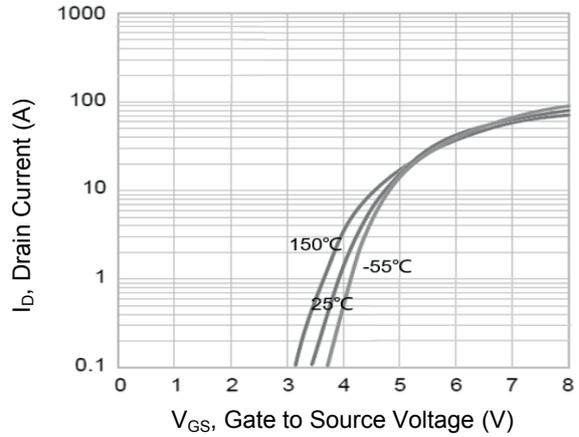


Figure 2. Transfer Characteristics

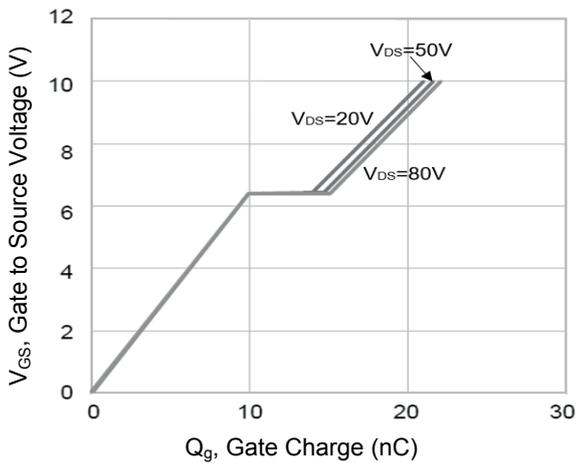


Figure 3. Gate Charge

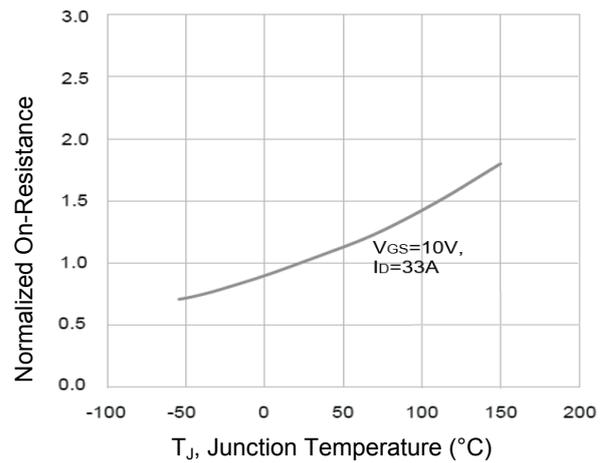


Figure 4. Normalized $R_{DS(ON)}$ Vs. T_J

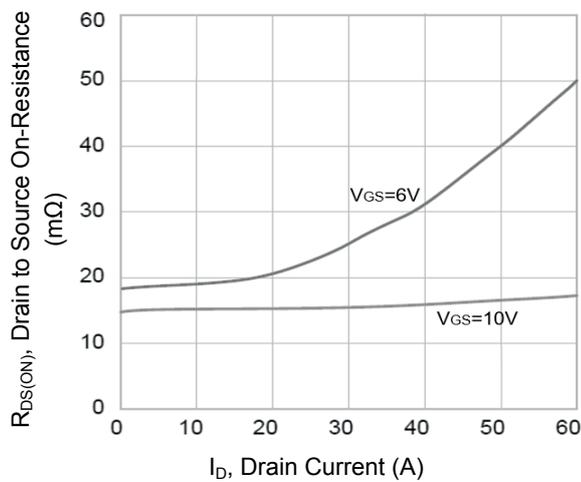


Figure 5. On-Resistance Vs. Drain Current

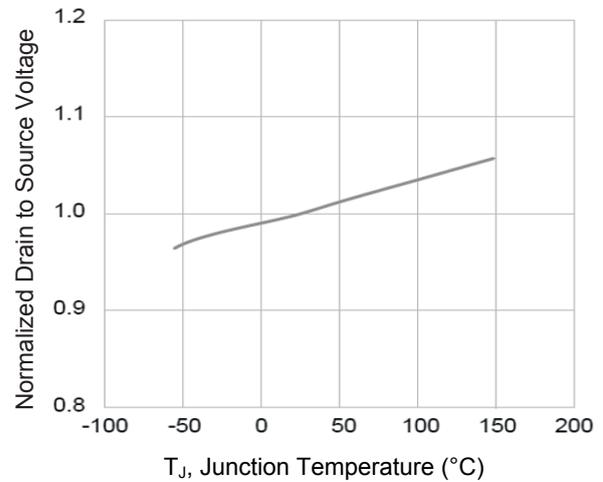


Figure 6. Normalized BV_{DSS} Vs. T_J

Typical Electrical and Thermal Characteristic Curves

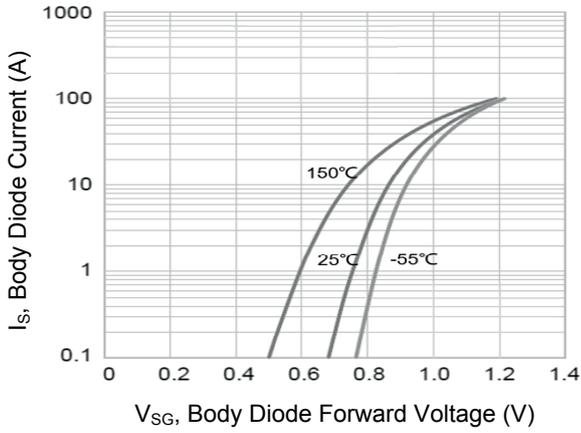


Figure 7. Body Diode Characteristics

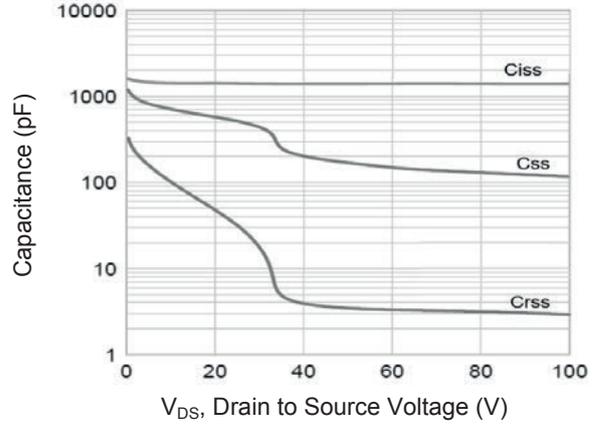


Figure 8. Capacitance Characteristics

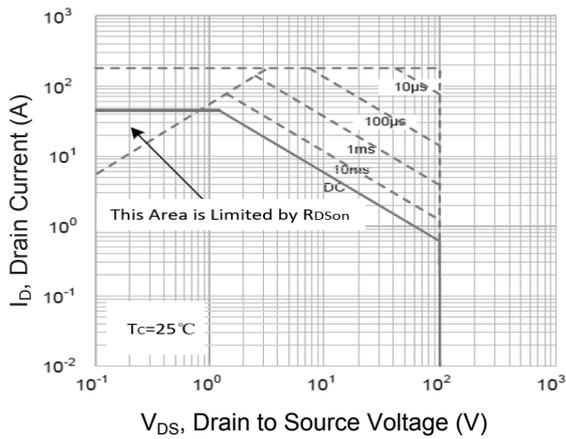
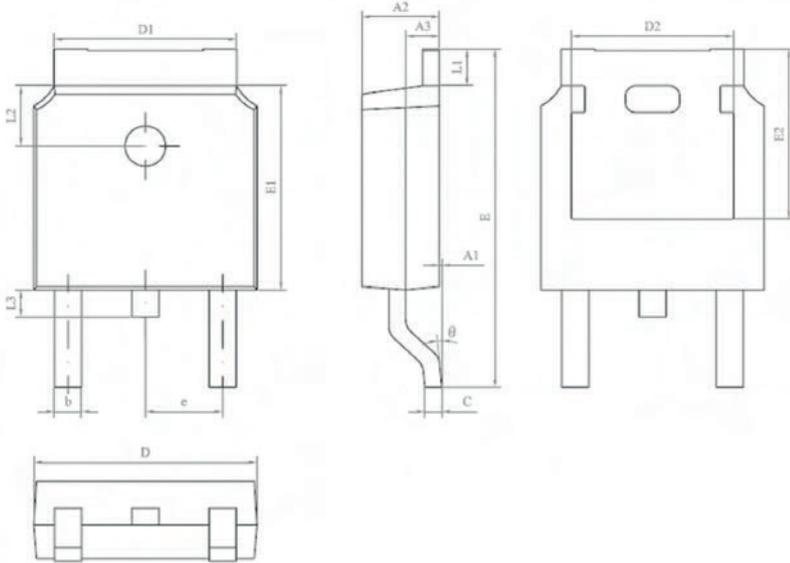


Figure 9. Safe Operation Area

Package Outline Dimensions TO-252(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°