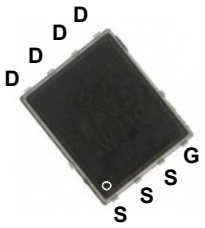
GOOD-ARK SEMICONDUCTOR

GSFP19010

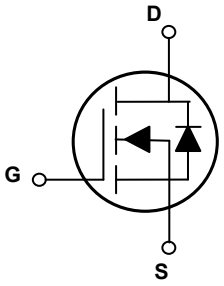
100V N-Channel MOSFET

Main Product Characteristics

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



PPAK5x6



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 GSFP19010 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-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous, at Steady-State, (Tc=25°C)[1]	I_D	45	A
Drain Current-Continuous, at Steady-State, (Tc=100°C)		32	
Drain Current-Pulsed[2]	I_{DM}	180	A
Single Pulse Avalanche Energy[3]	E_{AS}	81	mJ
Power Dissipation (T_C=25°C)	P_D	60	W
Linear Derating Factor (T_C=25°C)		0.48	W/°C
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)[4]	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.1	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics (T_C=25°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	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	-	-	1	μA
		T_J=125°C	-	-	20	
Gate-Source Forward Leakage	I_{GSS}	V_{GS}=±20V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=33A	-	15	19	mΩ
		V_{GS}=6V, I_D=16A	-	19	34	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	2.1	3.0	3.8	V
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}=50V, I_D=33A V_{GS}=10V	-	23	-	nC
Gate-Source Charge	Q_{gs}		-	10	-	
Gate-Drain ("Miller") Charge	Q_{gd}		-	4.9	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=50V, R_{GEN}=2Ω V_{GS}=10V, I_D=33A	-	8.4	-	nS
Rise Time	t_r		-	28.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	22.4	-	
Fall Time	t_f		-	7.8	-	
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, F=1MHz	-	1355	-	pF
Output Capacitance	C_{oss}		-	171	-	
Reverse Transfer Capacitance	C_{rss}		-	4	-	
Gate Resistance	R_g	F=1MHz	-	2.2	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
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}	V_{GS}=0V, I_S=45A	-	1.0	1.2	V
Reverse Recovery Time	T_{rr}	I_F=45A, T_J=25°C, di/dt=100A/μs	-	56	-	nS
Reverse Recovery Charge	Q_{rr}		-	0.09	-	uC

Notes:

1. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
2. Repetitive rating: Pulsed width limited by maximum junction temperature.
3. L=0.5mH, V_{DD}=80V, I_{AS}=18A, R_G=25Ω, T_J=25°C.
4. Device mounted on FR-4 PCB, 1inch x 0.85inch x 0.062inch.

Typical Electrical and Thermal Characteristic Curves

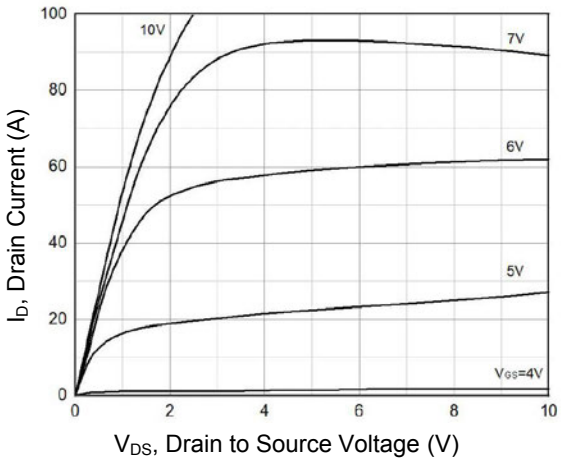


Figure 1. Output Characteristics

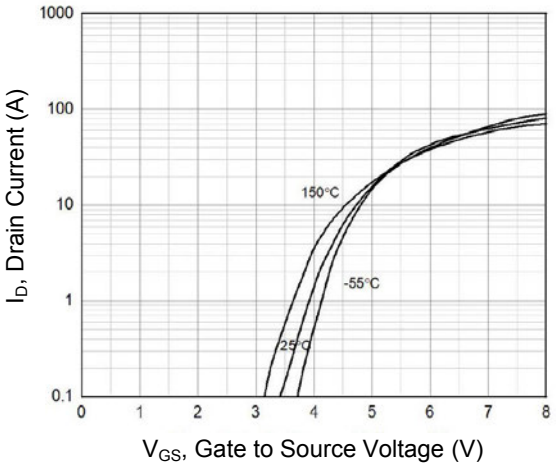


Figure 2. Transfer Characteristics

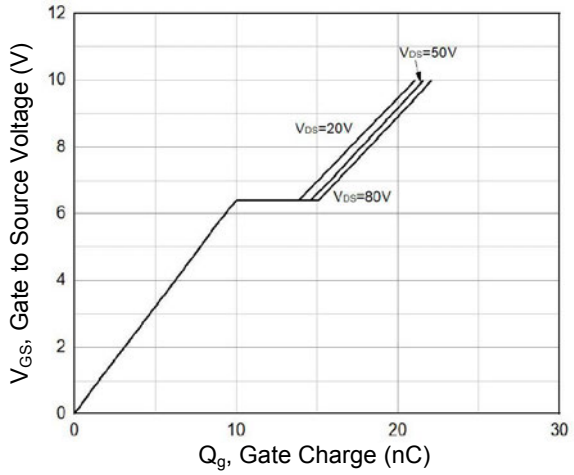


Figure 3. Gate Charge Characteristics

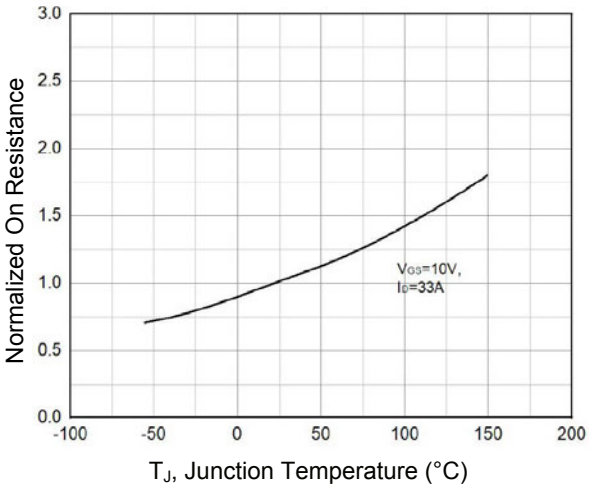


Figure 4. Normalized $R_{DS(ON)}$ vs. Junction Temperature

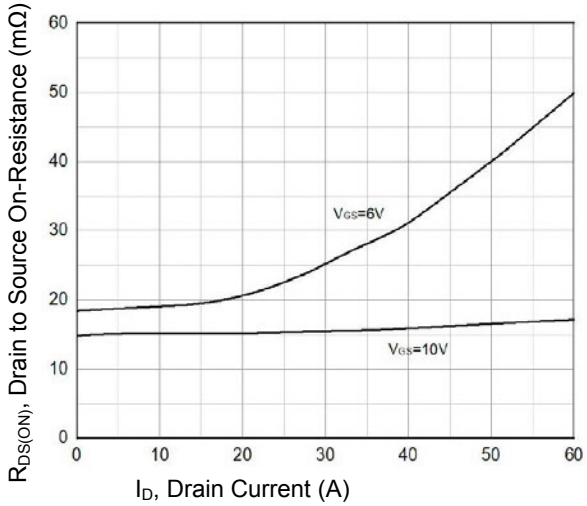


Figure 5. On-Resistance vs. Drain Current

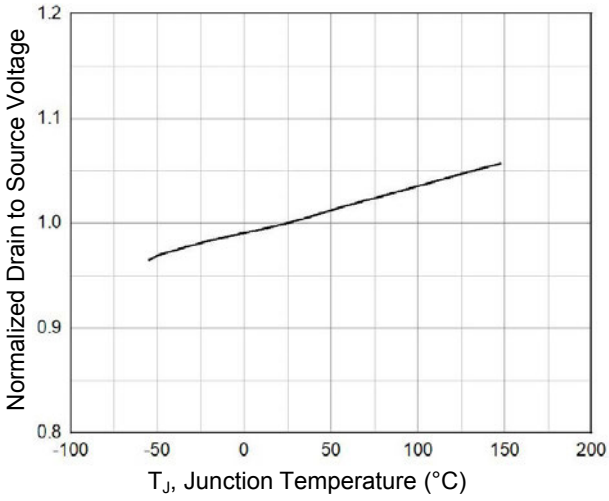


Figure 6. Normalized BVdss vs. Junction Temperature

Typical Electrical and Thermal Characteristic Curves

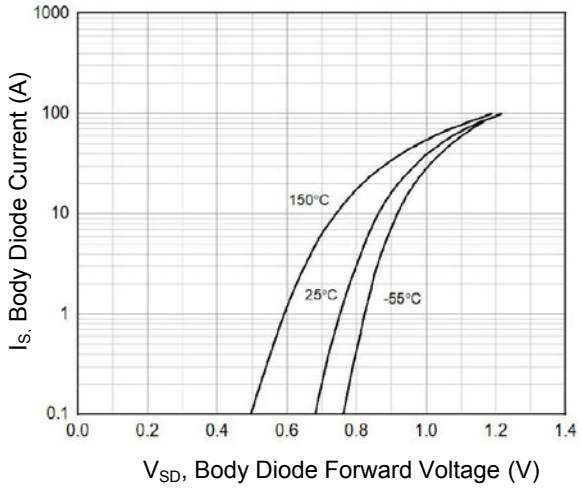


Figure 7. Body Diode Characteristics

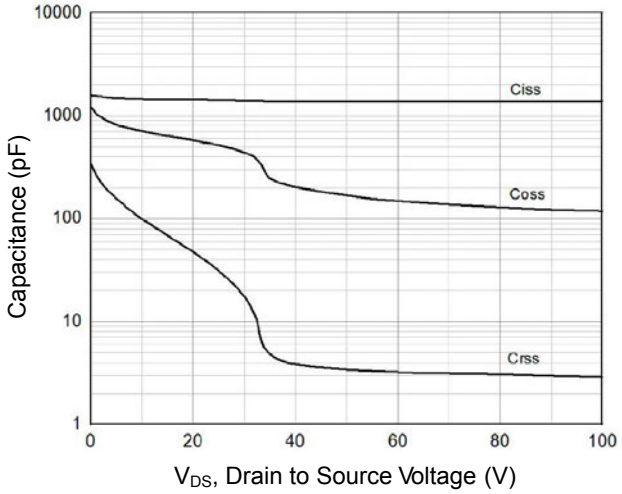


Figure 8. Capacitance Characteristics

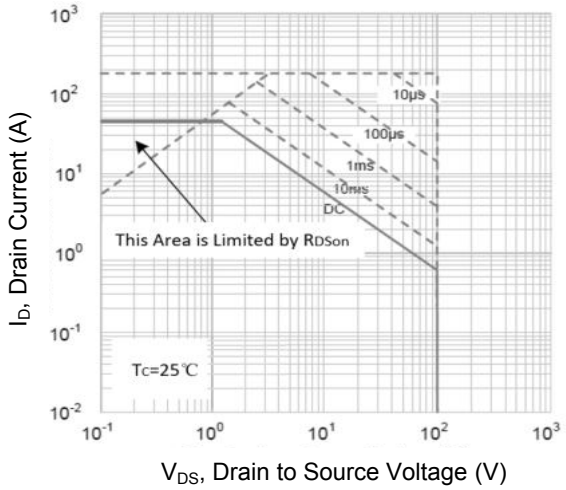
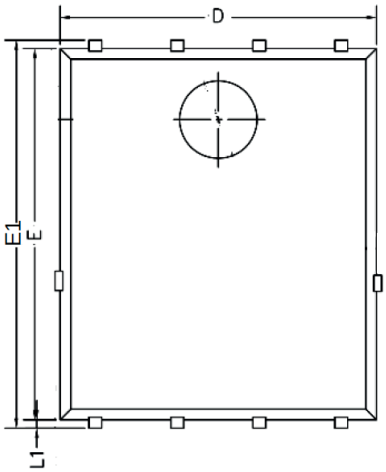
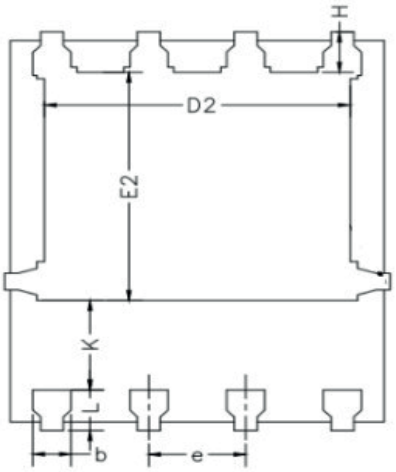


Figure 9. Safe Operation Area

Package Outline Dimensions (PPAK5x6)



TOP VIEW



BOTTOM VIEW

SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.20	0.035	0.047
b	0.30	0.55	0.012	0.022
C	0.15	0.35	0.006	0.014
D	4.70	5.20	0.185	0.205
D2	3.76	4.20	0.148	0.165
E2	3.30	3.85	0.130	0.152
E	5.60	5.90	0.220	0.232
E1	5.80	6.20	0.228	0.244
K	1.10	-	0.043	-
H	0.45	0.75	0.018	0.030
L	0.45	0.75	0.018	0.030
L1	0.25	0.45	0.010	0.018
e	1.27 BSC		0.050 BSC	

Order Information

Device	Package	Marking	Carrier	Quantity
GSFP19010	PPAK5x6	P19010	Tape & Reel	5,000 Pcs / Reel