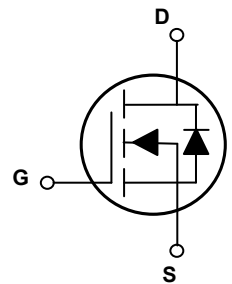
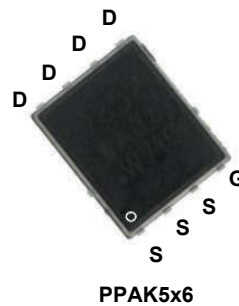


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	13m Ω (Max)
I_D	50A



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 GSFP13010 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_{DS}	100	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}\text{C}$) ¹	I_D	50	A
Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}\text{C}$)		35	A
Pulsed Drain Current ²	I_{DM}	200	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	96	W
Linear Derating Factor ($T_C=25^{\circ}\text{C}$)		0.77	W/ $^{\circ}\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	31	mJ
Junction-to-Case	$R_{\theta JC}$	1.31	$^{\circ}\text{C/W}$
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62.0	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics (T_C=25°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 =250μA	100	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
		T _J =125°C	-	-	20	
Gate-to-Source Forward Leakage	I _{GSS}	V _{GS} =±20V	-	-	±100	nA
Static Drain-to-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	11	13	mΩ
		V _{GS} =4.5V, I _D =10A	-	15	20	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.1	-	2.6	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V F=1MHz	-	1716	-	pF
Output Capacitance	C _{oss}		-	171	-	
Reverse Transfer Capacitance	C _{rss}		-	4	-	
Total Gate Charge	Q _g	I _D =20A, V _{DS} =50V, V _{GS} =10V	-	29	-	nC
Gate-to-Source Charge	Q _{gs}		-	7.1	-	
Gate-to-Drain ("Miller") Charge	Q _{gd}		-	7.0	-	
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =50V, I _D =20A, R _{GEN} =3Ω	-	7.6	-	nS
Rise Time	t _r		-	28	-	
Turn-Off Delay Time	t _{d(off)}		-	32	-	
Fall Time	t _f		-	11	-	
Gate Resistance	R _g	F=1MHz	-	2.4	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	50	A
Pulsed Source Current (Body Diode)	I _{SM}		-	-	200	A
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	1.0	1.3	V
Reverse Recovery Time	t _{rr}	T _J =25°C, I _F =20A, di/dt=100A/μs	-	42	-	nS
Reverse Recovery Charge	Q _{rr}		-	50	-	nC

Notes

1. Pulse test: Pulse width ≤ 300us, duty cycle ≤ 2%.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. L=0.1mH, V_{DD}=80V, I_{AS}=25A, 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

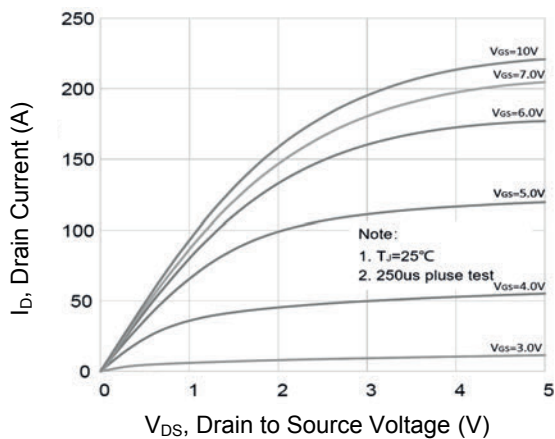


Figure 1. Output Characteristics

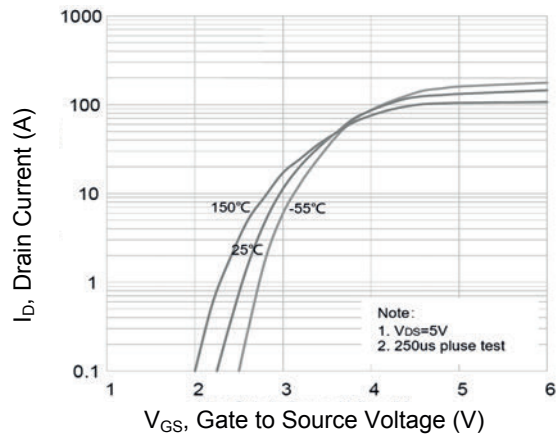


Figure 2. Transfer Characteristics

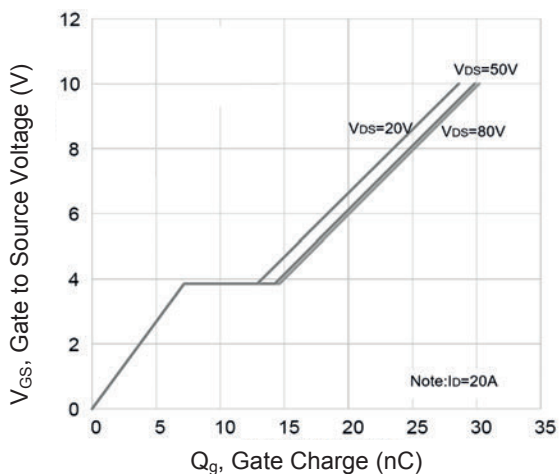


Figure 3. Gate Charge

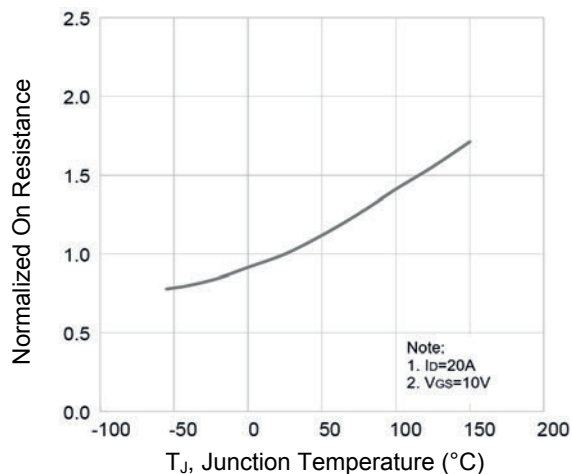


Figure 4. Normalized $R_{DS(ON)}$ Vs. T_J

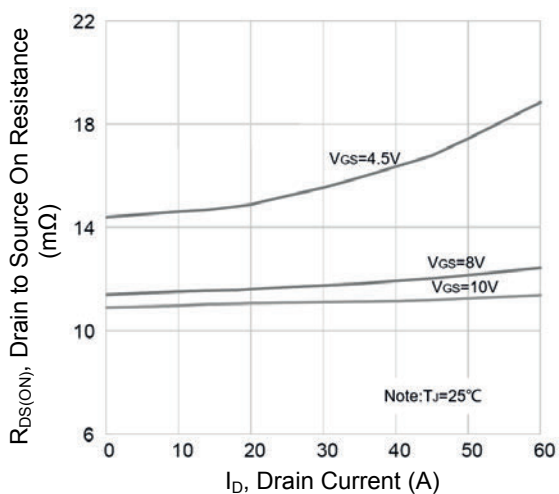


Figure 5. On-Resistance Vs. Drain Current

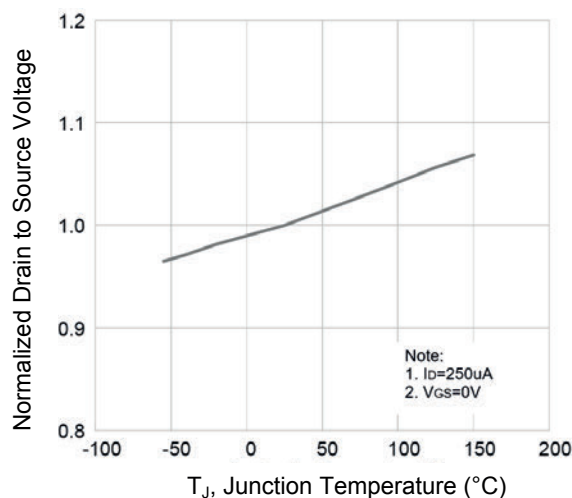


Figure 6. Normalized BV_{DSS} Vs. T_J

Typical Electrical and Thermal Characteristic Curves

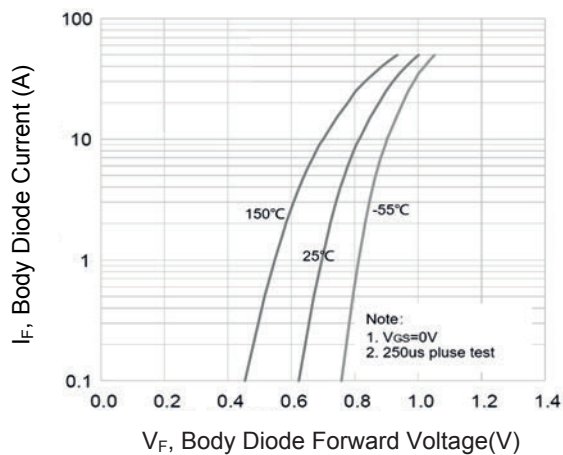


Figure 7. Body Diode Characteristics

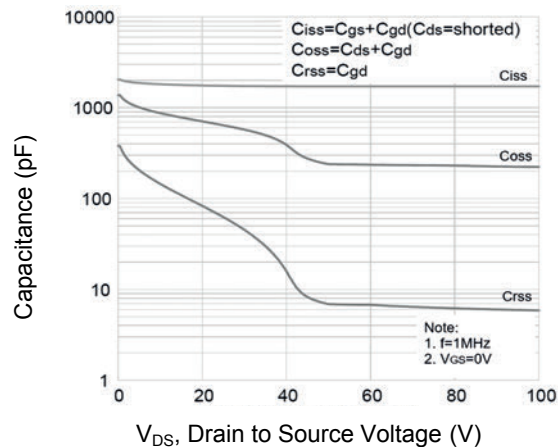


Figure 8. Capacitance Characteristics

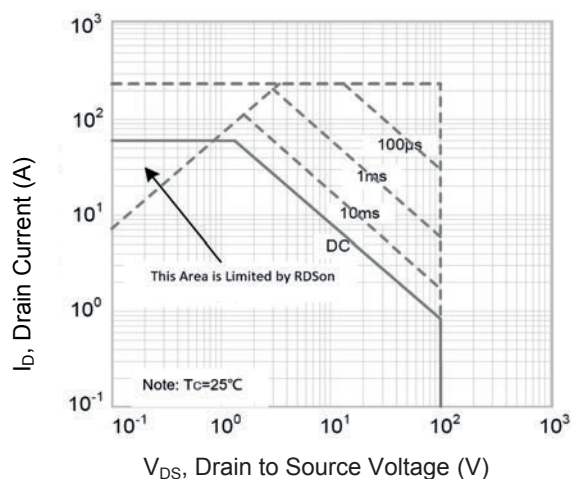
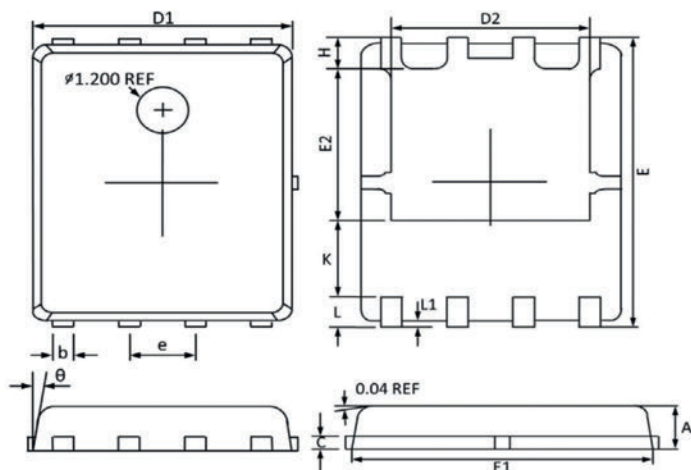


Figure 9. Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.800	1.100	0.031	0.043
b	0.330	0.510	0.013	0.020
C	0.200	0.300	0.008	0.012
D1	4.800	5.100	0.189	0.201
D2	3.610	4.100	0.142	0.161
E	5.900	6.200	0.232	0.244
E1	5.700	5.900	0.224	0.232
E2	3.350	3.780	0.132	0.149
e	1.27 BSC		0.050 BSC	
H	0.410	0.700	0.016	0.028
K	1.100	1.500	0.043	0.059
L	0.510	0.710	0.020	0.028
L1	0.060	0.200	0.002	0.008
θ	0°	12°	0°	12°