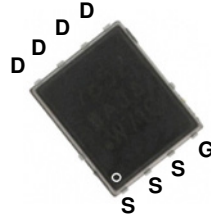
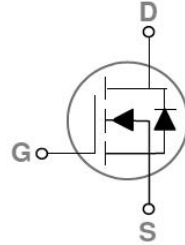


Main Product Characteristics

BV_{DSS}	-40V
$R_{DS(ON)}$	17m Ω
I_D	-48A



PPAK 5X6



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switch mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

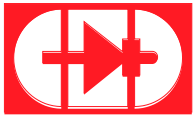


Description

The GSFP0449 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 supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous($T_C=25^\circ\text{C}$)	I_D	-48	A
Drain Current-Continuous($T_C=100^\circ\text{C}$)		-30	A
Drain Current-Pulsed ¹	I_{DM}	-192	A
Single Pulse Avalanche Energy ²	E_{AS}	100	mJ
Single Pulse Avalanche Current ²	I_{AS}	-45	A
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	88	W
Power Dissipation-Derate Above 25°C		0.71	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.41	$^\circ\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-50 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-50 To +150	$^\circ\text{C}$


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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=-1mA$	-	-0.05	-	V/ $^{\circ}\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V,$ $T_J=25^{\circ}\text{C}$	-	-	-1	μA
		$V_{DS}=-32V, V_{GS}=0V,$ $T_J=125^{\circ}\text{C}$	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-15A$	-	15	17	m Ω
		$V_{GS}=-4.5V, I_D=-10A$	-	22	25	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2	-1.6	-2.5	V
Forward Transconductance	g_{FS}	$V_{DS}=-10V, I_D=-3A$	-	13	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-25V, V_{GS}=0V,$ $F=1.0MHz$	-	2260	3300	PF
Output Capacitance	C_{oss}		-	170	250	
Reverse Transfer Capacitance	C_{rss}		-	130	190	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $F=1.0MHz$	-	7.5	15	Ω
Switching Characteristics						
Turn-On Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=-20V, I_D=-1A$ $V_{GS}=-10V, R_G=6\Omega$	-	18.2	36	nS
Rise Time ^{3,4}	t_r		-	4.2	8.5	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	72	140	
Fall Time ^{3,4}	t_f		-	9.8	20	
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=-20V, I_D=-5A,$ $V_{GS}=-4.5V$	-	19	38	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	6.2	12	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	5.2	10	
Drain-Source Diode Characteristics						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	-48	A
Pulsed Source Current	I_{SM}		-	-	-96	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1A,$ $T_J=25^{\circ}\text{C}$	-	-	-1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-45A, R_G=25\Omega$ Starting $T_J=25^{\circ}\text{C}$
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

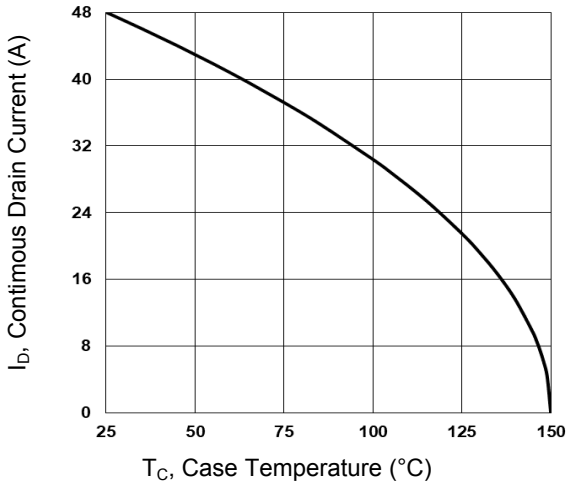


Figure 1. Continuous Drain Current vs. T_c

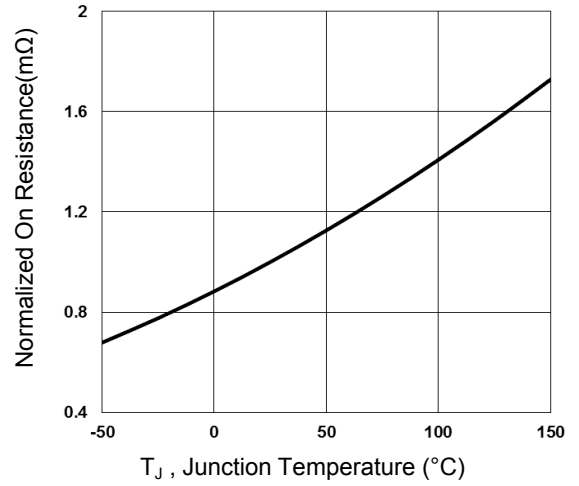


Figure 2. Normalized R_{DS(ON)}-vs. T_J

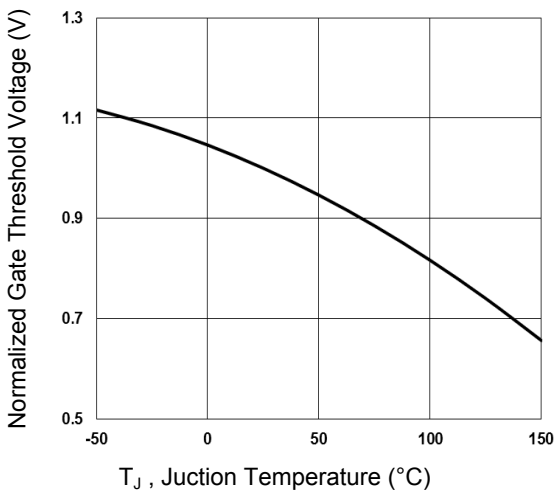


Figure 3. Normalized V_{th} vs. T_J

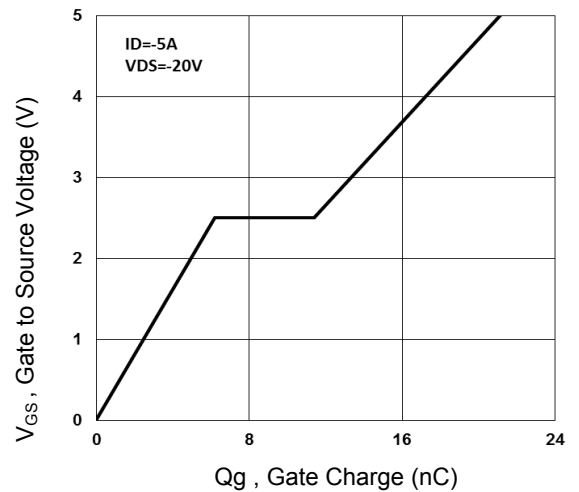


Figure 4. Gate Charge Characteristics

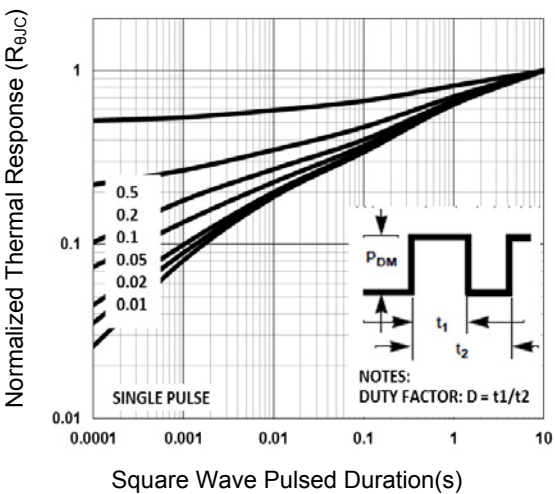


Figure 5. Normalized Transient Impedance

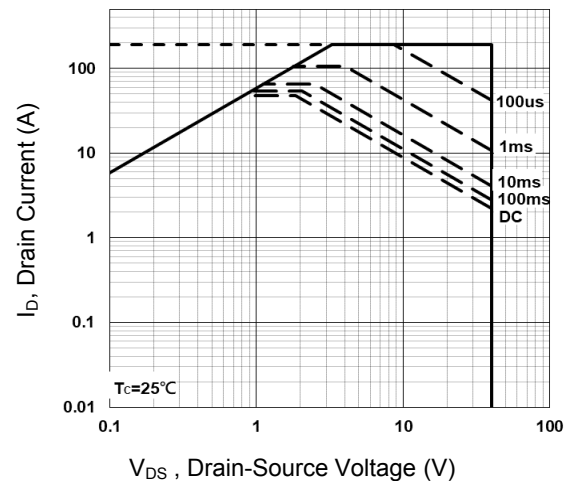


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

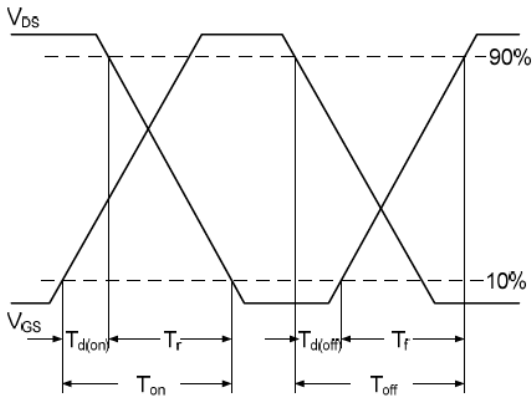


Figure 7. Switching Time Waveform

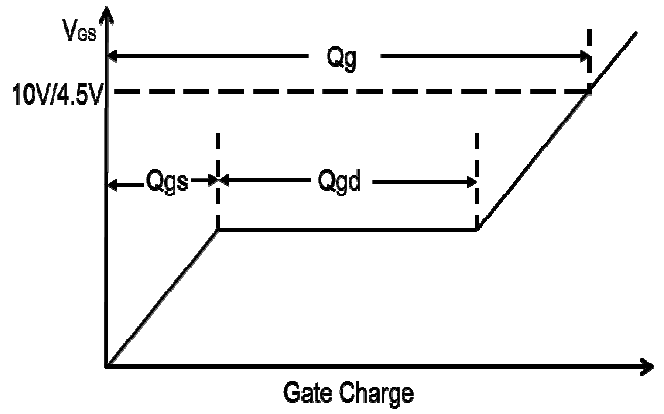
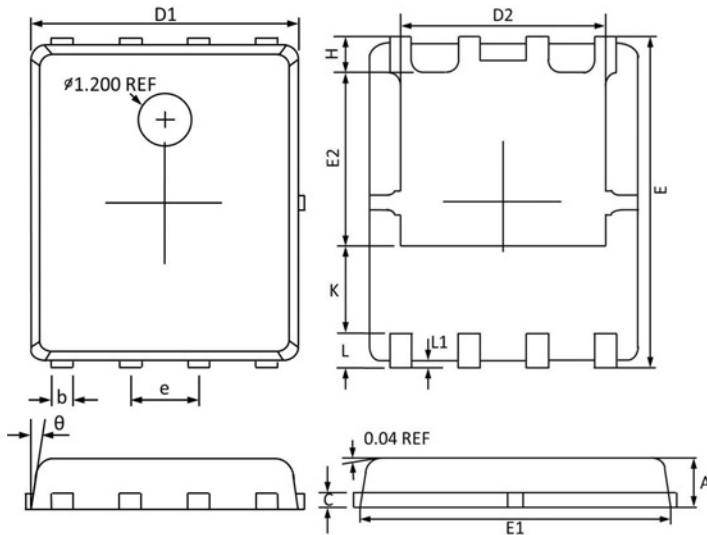


Figure 8. Gate Charge Waveform

Package Outline Dimensions (PPAK5X6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.	100	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.27BSC		0.05BSC	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
θ	12°	0°	12°	0°