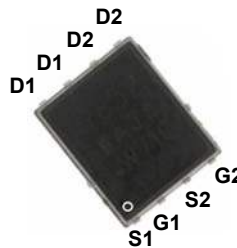
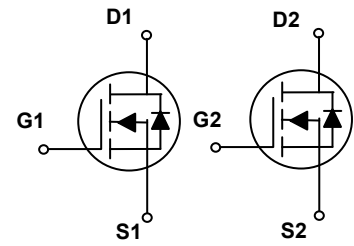


Main Product Characteristics

BV_{DSS}	65V
$R_{DS(ON)}$	13m Ω
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 GSFP6886 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 ($T_C=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	+20/-12	V
Drain Current-Continuous ($T_C=25^{\circ}C$)	I_D	45	A
Drain Current-Continuous ($T_C=100^{\circ}C$)		28.5	
Drain Current-Pulsed ¹	I_{DM}	180	A
Single Pulse Avalanche Energy ²	E_{AS}	20	mJ
Single Pulse Avalanche Current ²	I_{AS}	20	A
Power Dissipation ($T_C=25^{\circ}C$)	P_D	67	W
Power Dissipation-Derate above 25 $^{\circ}C$		0.54	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^{\circ}C/W$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.86	$^{\circ}C/W$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}C$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}C$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	65	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=1\text{mA}$	-	0.03	-	$V/^{\circ}\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V,$ $T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{DS}=48V, V_{GS}=0V,$ $T_J=85^{\circ}\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=+20V, V_{DS}=0V$	-	-	100	nA
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	11	13	m Ω
		$V_{GS}=4.5V, I_D=15A$	-	18	23	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.5	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-5	-	mV/ $^{\circ}\text{C}$
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=3A$	-	8	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=30V,$ $I_D=20A, V_{GS}=10V$	-	17.6	26	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	2.7	4.1	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	6.3	9.5	
Turn-On Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=30V, R_G=3.3\Omega$ $V_{GS}=10V, I_D=1A$	-	10	20	nS
Rise Time ^{3,4}	t_r		-	13.5	27	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	28	56	
Fall Time ^{3,4}	t_f		-	20	40	
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V,$ $F=1\text{MHz}$	-	945	1890	pF
Output Capacitance	C_{oss}		-	275	550	
Reverse Transfer Capacitance	C_{rss}		-	26	52	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $F=1\text{MHz}$	-	0.9	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	55	A
Pulsed Source Current ³	I_{SM}		-	-	110	A
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=1A,$ $T_J=25^{\circ}\text{C}$	-	-	1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=10V, I_S=20A$ $di/dt=100A/\mu s$ $T_J=25^{\circ}\text{C}$	-	26	-	nS
Reverse Recovery Charge	Q_{rr}		-	30	-	nC

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=48V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=20A, R_G=25\Omega,$ starting $T_J=25^{\circ}\text{C}$.
3. Pulse test: pulse width $\leq 300\mu s,$ duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

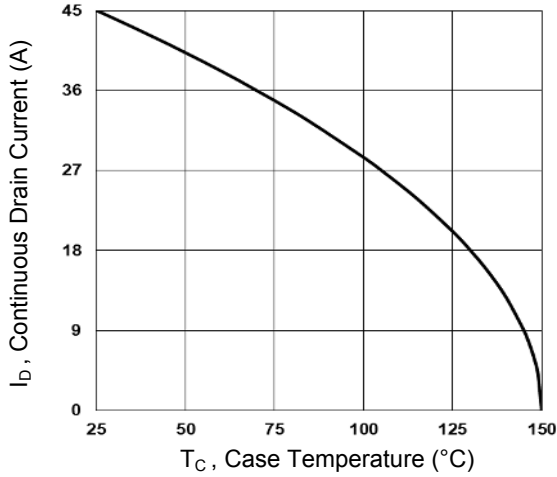


Figure 1. Continuous Drain Current vs. T_c

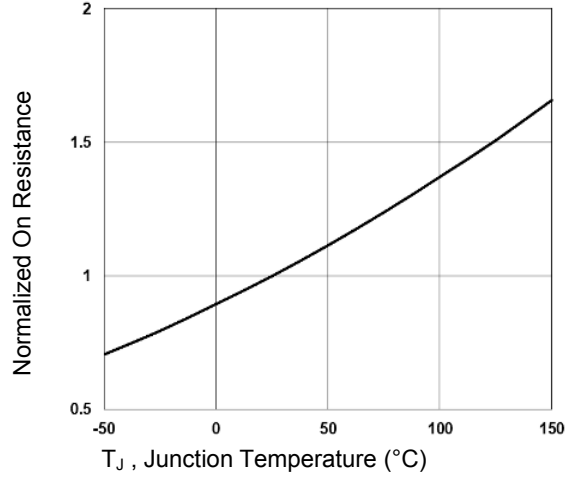


Figure 2. Normalized R_{DS(ON)} vs. T_J

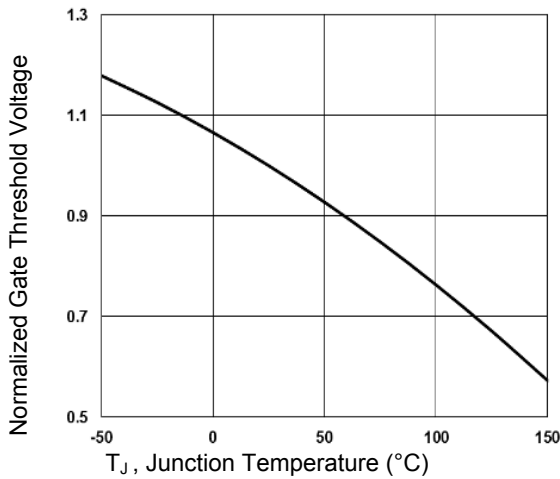


Figure 3. Normalized V_{th} vs. T_J

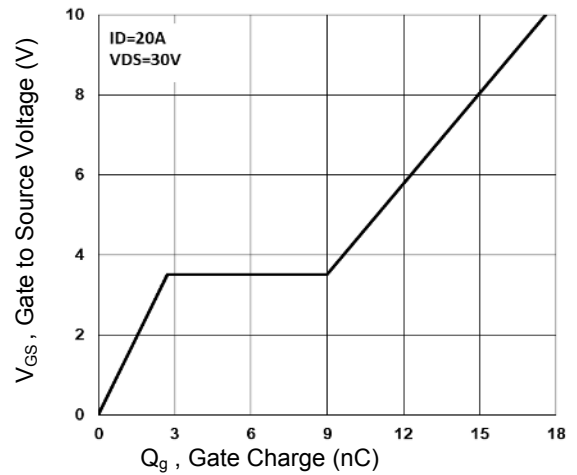


Figure 4. Gate Charge Waveform

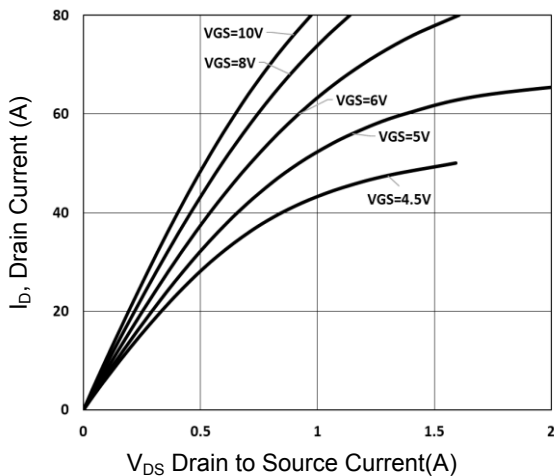


Figure 5. Typical Output Characteristics

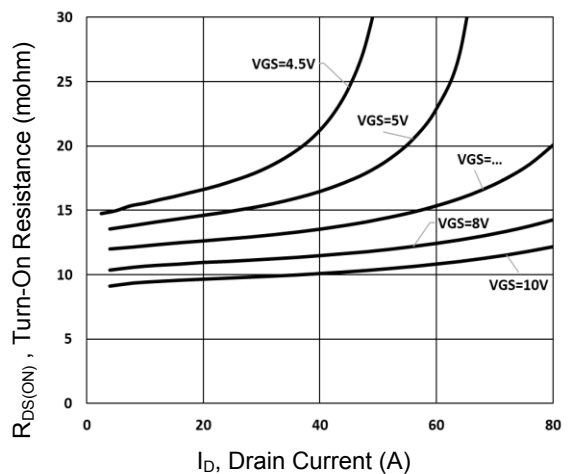


Figure 6. Turn-On Resistance vs. I_D

Typical Electrical and Thermal Characteristic Curves

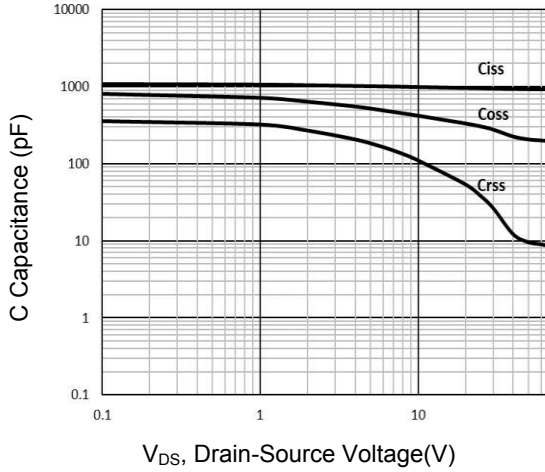


Figure 7. Capacitance vs. V_{DS}

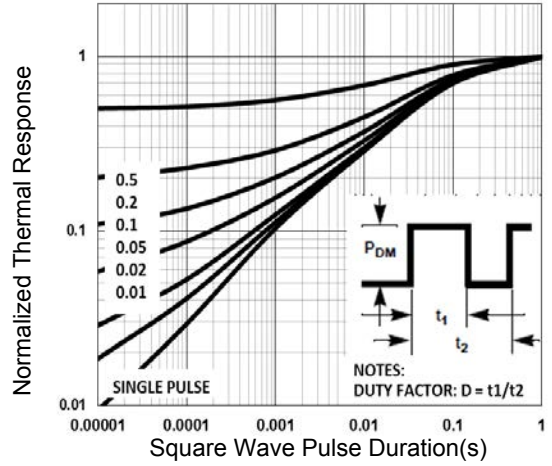


Figure 8. Normalized Transient Response

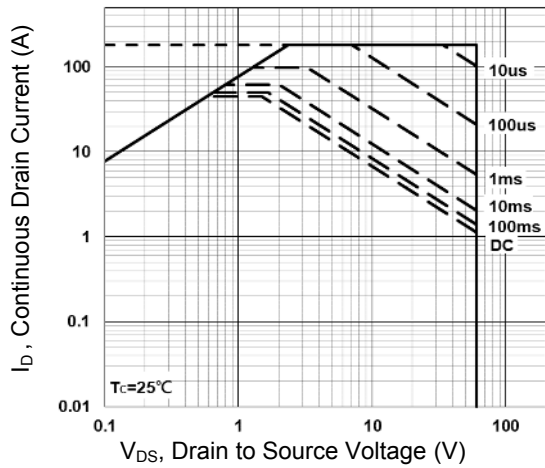


Figure 9. Maximum Safe Operation Area

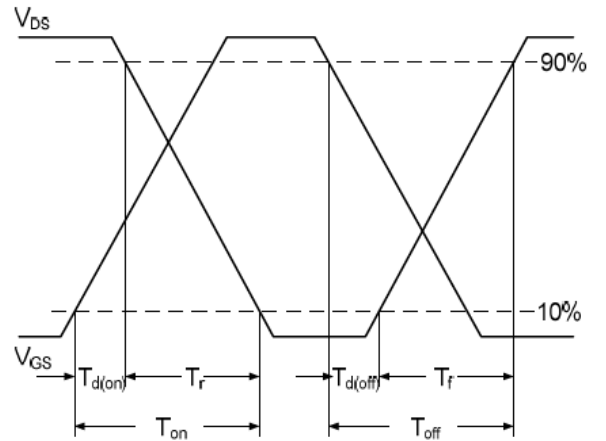


Figure 10. Switching Time Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

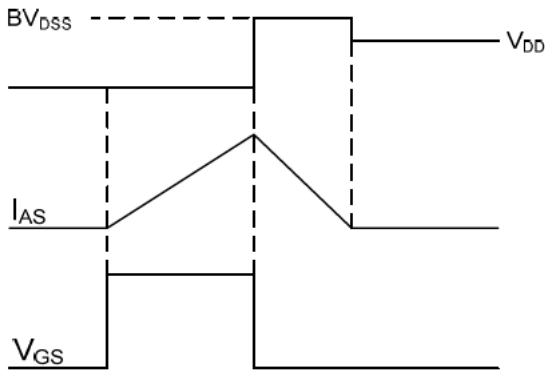
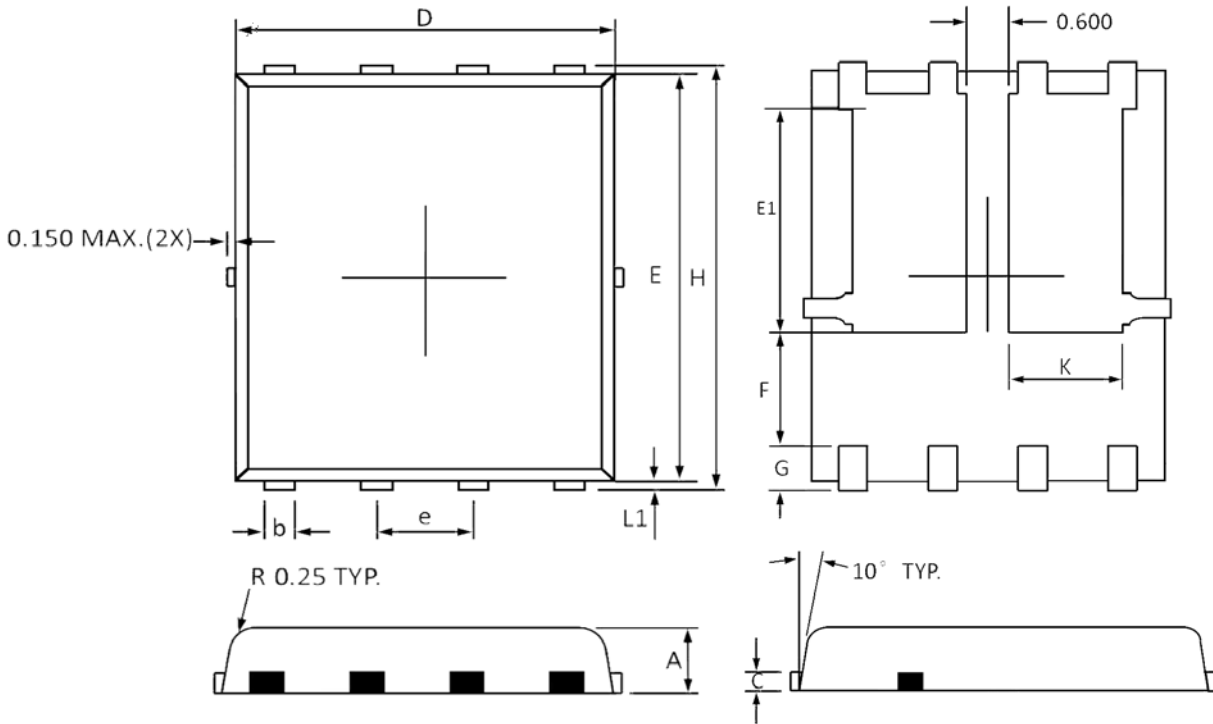


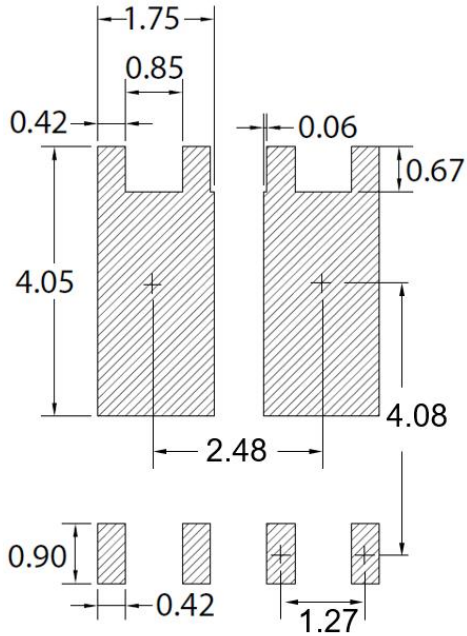
Figure 11. EAS Waveform

Package Outline Dimensions (PPAK5X6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.800	1.200	0.031	0.047
b	0.300	0.510	0.012	0.020
C	0.250 Ref		0.010 Ref	
D	4.800	5.400	0.189	0.213
E	5.450	5.960	0.215	0.235
E1	3.200	3.800	0.126	0.150
e	1.27 BSC		0.050 BSC	
F	1.000	1.900	0.039	0.075
G	0.380	0.800	0.015	0.031
H	5.850	6.300	0.230	0.248
L1	0.050	0.250	0.002	0.010
K	1.500	1.900	0.059	0.074

Recommended Pad Layout



(unit : mm)

Order Information

MPN	Package	Marking	Quantity	HSF Status
GSFP6886	PPAK5x6	DC6886	3000pcs / Reel	RoHS compliant