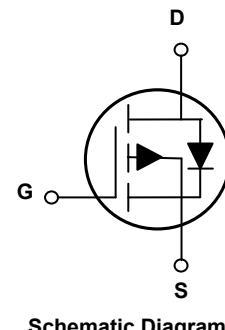
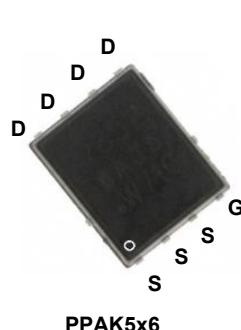


Main Product Characteristics

V_{DS}	-30V
$R_{DS(ON)}$	8mΩ
I_D	-60A



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 GSFP0360 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}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-60	A
Pulsed Drain Current	I_{DM}	-160	A
Maximum Power Dissipation	P_D	70	W
Derating Factor		0.56	W/°C
Single Pulse Avalanche Energy ⁵	E_{AS}	400	mJ
Thermal Resistance, Junction-to-Case ²	$R_{\theta JC}$	1.79	°C/W
Storage Temperature Range	T_{STG}	-55 To +150	°C
Operating Junction Temperature Range	T_J	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=-250\mu\text{A}$	-30	-33	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}}=-30\text{V}, V_{\text{GS}}=0\text{V}$	-	-	-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	±100	nA
On Characteristics³						
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=-250\mu\text{A}$	-1.1	-1.6	-2.1	V
Drain-Source On-State Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=-10\text{V}, I_{\text{D}}=-30\text{A}$	-	4.2	6	$\text{m}\Omega$
		$V_{\text{GS}}=-4.5\text{V}, I_{\text{D}}=-30\text{A}$	-	5.8	8	
Forward Transconductance	g_{FS}	$V_{\text{DS}}=-5\text{V}, I_{\text{D}}=-30\text{A}$	-	20	-	S
Dynamic Characteristics⁴						
Input Capacitance	C_{iss}	$V_{\text{DS}}=-15\text{V}, V_{\text{GS}}=0\text{V}, F=1.0\text{MHz}$	-	4580	-	PF
Output Capacitance	C_{oss}		-	755	-	
Reverse Transfer Capacitance	C_{rss}		-	564	-	
Switching Characteristics⁴						
Turn-On Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=-15\text{V}, I_{\text{D}}=-30\text{A}$ $V_{\text{GS}}=-10\text{V}, R_{\text{GEN}}=6\Omega$	-	20	-	nS
Turn-On Rise Time	t_r		-	18	-	
Turn-Off Delay Time	$t_{\text{d}(\text{off})}$		-	65	-	
Turn-Off Fall Time	t_f		-	14	-	
Total Gate Charge	Q_g	$V_{\text{DS}}=-15\text{V}, I_{\text{D}}=-30\text{A}, V_{\text{GS}}=-10\text{V}$	-	138	-	nC
Gate-Source Charge	Q_{gs}		-	18	-	
Gate-Drain Charge	Q_{gd}		-	35.7	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=-30\text{A}$	-	-0.85	-1.2	V
Diode Forward Current ²	I_{S}		-	-	-60	A
Reverse Recovery Time	t_{rr}	$I_{\text{F}}=-30\text{A}, \frac{dI}{dt}=100\text{A}/\mu\text{s}^3, T_J=25^\circ\text{C}$	-	-	47	ns
Reverse Recovery Charge	Q_{rr}		-	-	45	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L_s+L_d)				

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. EAS condition: $T_j=25^\circ\text{C}, V_{\text{DD}}=-15\text{V}, V_{\text{G}}=-10\text{V}, L=0.5\text{mH}, R_g=25\Omega$

Typical Electrical and Thermal Characteristic Curves

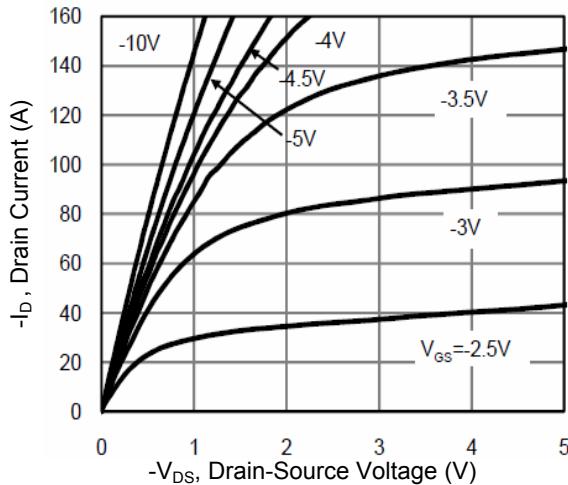


Figure 1. Output Characteristics

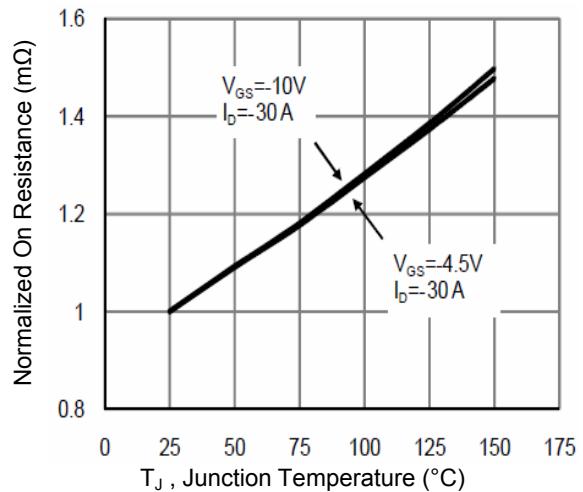


Figure 2. Rdson-Junction Temperature

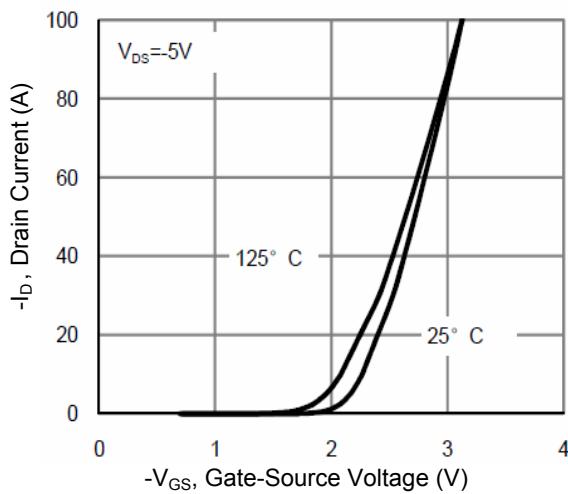


Figure 3. Transfer Characteristics

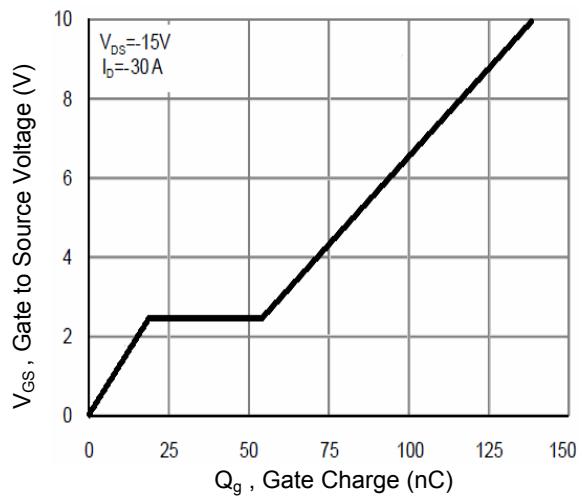


Figure 4. Gate Charge

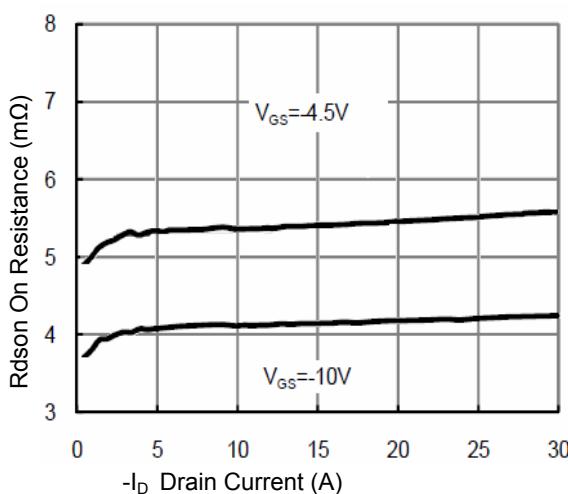


Figure 5. Rdson-Drain Current

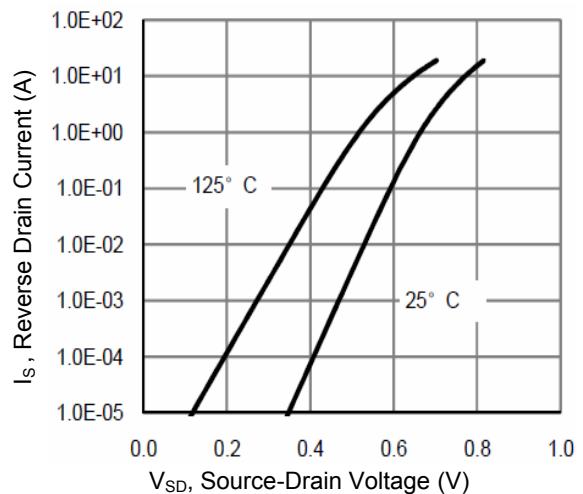


Figure 6. Source-Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

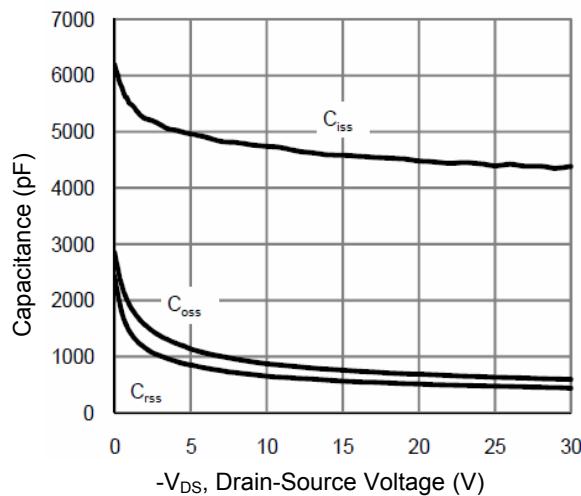


Figure 7. Capacitance vs. V_{DS}

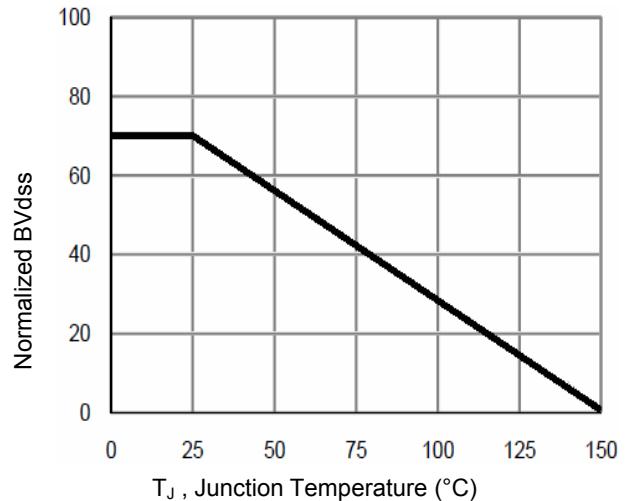


Figure 8. BV_{DSS} vs. Junction Temperature

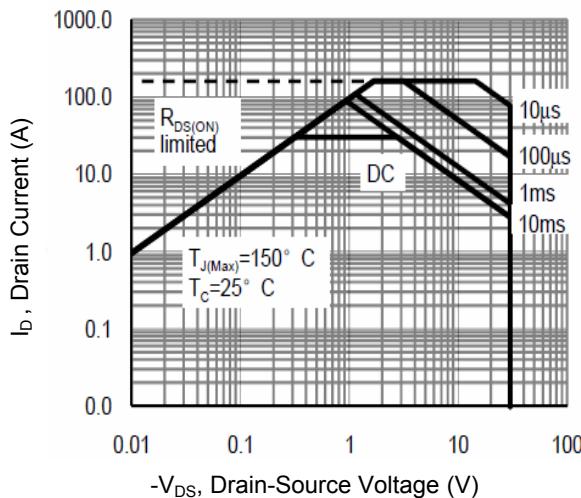


Figure 9. Safe Operation Area

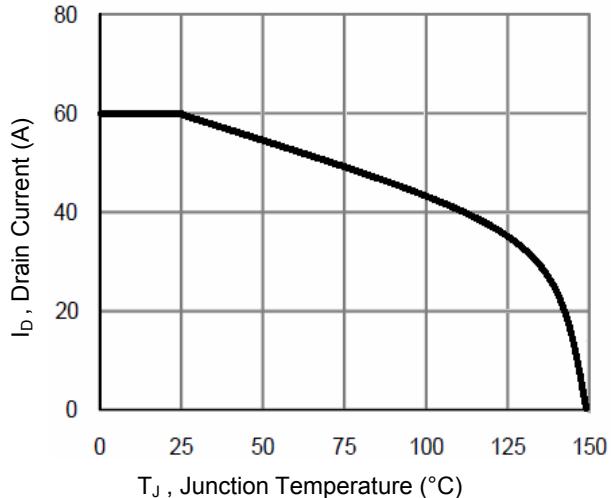


Figure 10. ID Current Derating vs. Junction Temperature

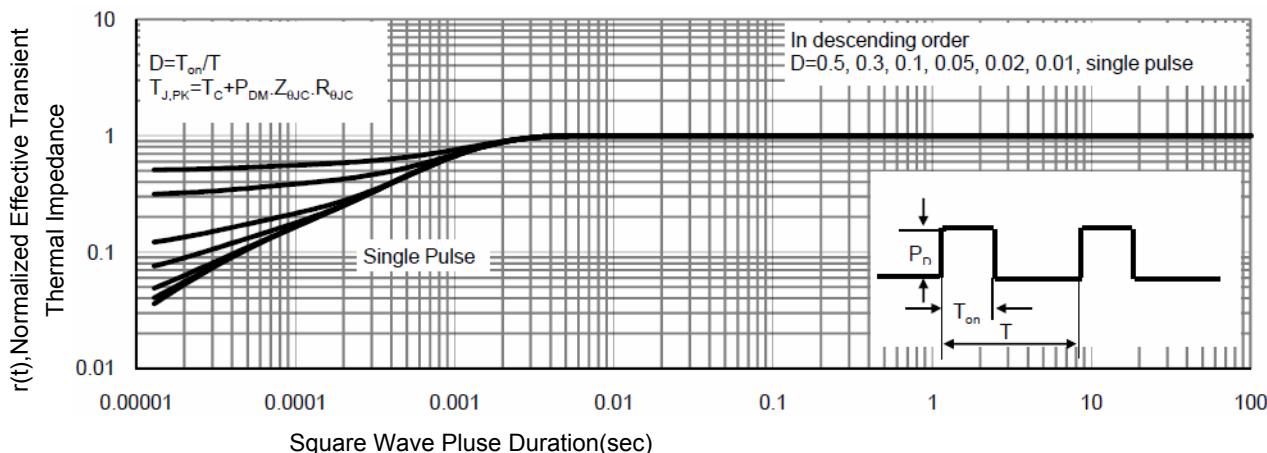


Figure 11 Normalized Maximum Transient Thermal Impedance

Typical Electrical and Thermal Characteristic Curves

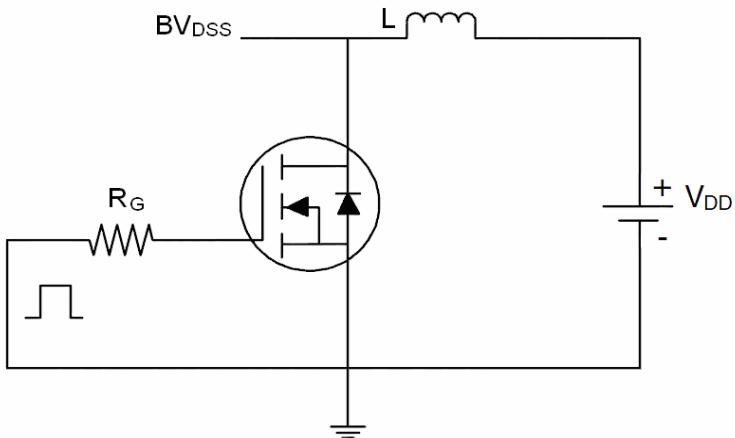


Figure 12. E_{AS} Test Circuit

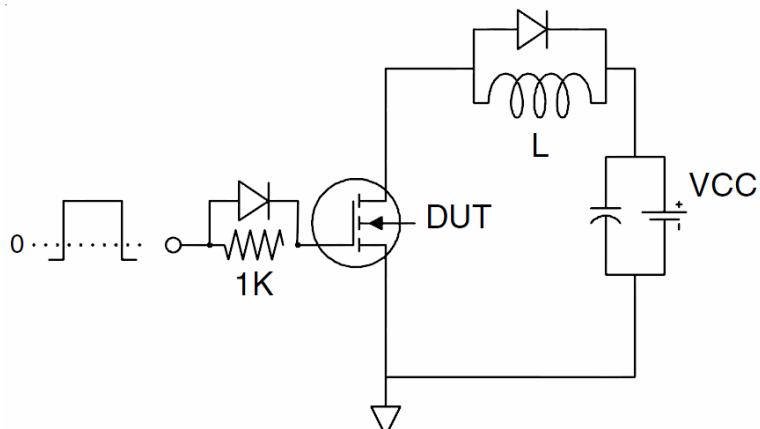


Figure 13. Gate Charge Test Circuit

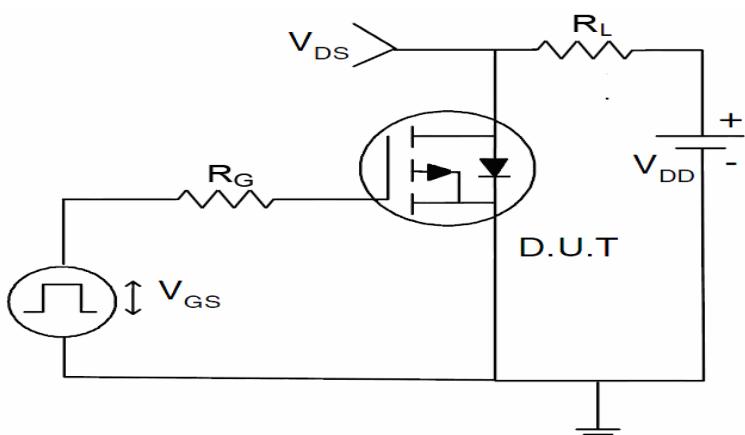
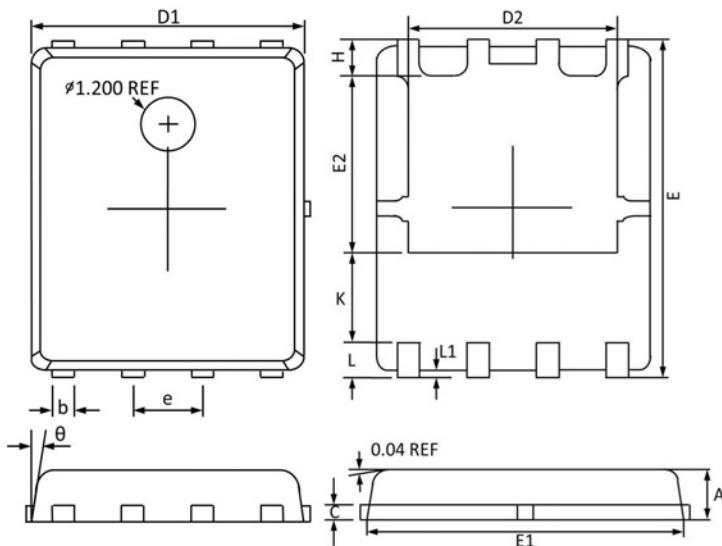


Figure 14. Switch Time Test Circuit

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	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°