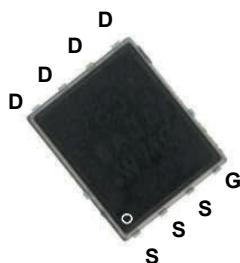
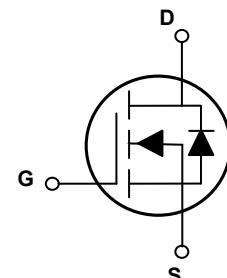


Main Product Characteristics

V_{DS}	60V
I_D	200A
$R_{DS(ON)}$	2.3mΩ (Max.)



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 GSFP06R02 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 ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain Source Voltage	V_{DS}	60	V
Gate Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, $T_C=25^\circ\text{C}^1$	I_D	200	A
Pulsed Drain Current, $T_C=25^\circ\text{C}^2$	$I_{D, \text{pulse}}$	600	A
Continuous Diode Forward Current, $T_C=25^\circ\text{C}^1$	I_S	200	A
Diode Pulsed Current, $T_C=25^\circ\text{C}^2$	$I_{S, \text{Pulse}}$	600	A
Power Dissipation, $T_C=25^\circ\text{C}^3$	P_D	132	W
Single Pulsed Avalanche Energy ⁵	E_{AS}	240	mJ
Operation and Storage Temperature	T_{stg}, T_J	-55 to 150	°C
Thermal Resistance, Junction-Case	$R_{\theta JC}$	0.95	°C/W
Thermal Resistance, Junction-Ambient ⁴	$R_{\theta JA}$	62	°C/W

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

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	60	-	-	V
Gate Threshold Voltage	$V_{\text{GS(th)}}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	1.0	-	2.5	V
Drain-Source On-state Resistance	$R_{\text{DS(ON)}}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=30\text{A}$	-	2.0	2.3	$\text{m}\Omega$
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=20\text{V}$	-	-	100	nA
		$V_{\text{GS}}=-20\text{V}$	-	-	-100	
Drain-to-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=60\text{V}, V_{\text{GS}}=0\text{V}$	-	-	1	μA
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=25\text{V}, F=100\text{kHz}$	-	6649	-	pF
Output Capacitance	C_{oss}		-	1281	-	pF
Reverse Transfer Capacitance	C_{rss}		-	59.6	-	pF
Turn-on Delay Time	$t_{\text{d(on)}}$	$V_{\text{GS}}=10\text{V}, V_{\text{DS}}=50\text{V}, R_{\text{G}}=2\Omega, I_{\text{D}}=50\text{A}$	-	32.2	-	ns
Rise Time	t_{r}		-	53.3	-	ns
Turn-off Delay Time	$t_{\text{d(off)}}$		-	93.2	-	ns
Fall Time	t_{f}		-	25.3	-	ns
Total Gate Charge	Q_{g}	$V_{\text{GS}}=10\text{V}, V_{\text{DS}}=50\text{V}, I_{\text{D}}=50\text{A}$	-	103.5	-	nC
Gate-Source Charge	Q_{gs}		-	18	-	nC
Gate-Drain Charge	Q_{gd}		-	17.2	-	nC
Gate Plateau Voltage	V_{plateau}		-	3.4	-	V
Gate Resistance	R_{g}	$F=1\text{MHz}, \text{Open Drain}$	-	1.8	-	Ω
Source-Drain Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	$I_{\text{s}}=20\text{A}, V_{\text{GS}}=0\text{V}$	-	-	1.3	V
Reverse Recovery Time	T_{rr}	$V_{\text{R}}=50\text{V}, I_{\text{s}}=50\text{A}, \text{di/dt}=100\text{A}/\mu\text{s}$	-	155	-	ns
Reverse Recovery Charge	Q_{rr}		-	150	-	nC
Peak Reverse Recovery Current	I_{rrm}		-	2.2	-	A

Note:

- Calculated continuous current based on maximum allowable junction temperature.
- Repetitive rating; pulse width limited by max. junction temperature.
- P_{d} is based on max. junction temperature, using junction-case thermal resistance.
- The value of $R_{\theta\text{JA}}$ is measured with the device mounted on 1in² FR-4 board with 2oz. copper, in a still air environment with $T_{\text{A}}=25^\circ\text{C}$.
- $V_{\text{DD}}=50\text{V}, V_{\text{GS}}=10\text{V}, L=0.3\text{mH}$, starting $T_J=25^\circ\text{C}$.

Typical Electrical and Thermal Characteristic Curves

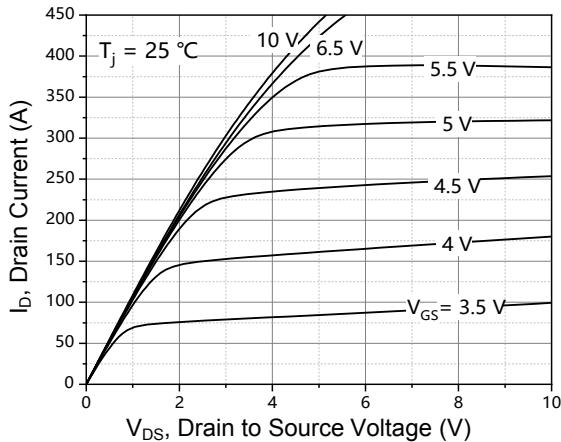


Figure 1. Typical Output Characteristics

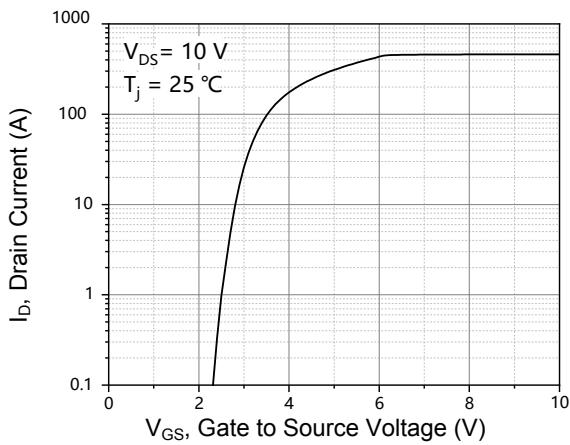


Figure 2. Typical Transfer Characteristics

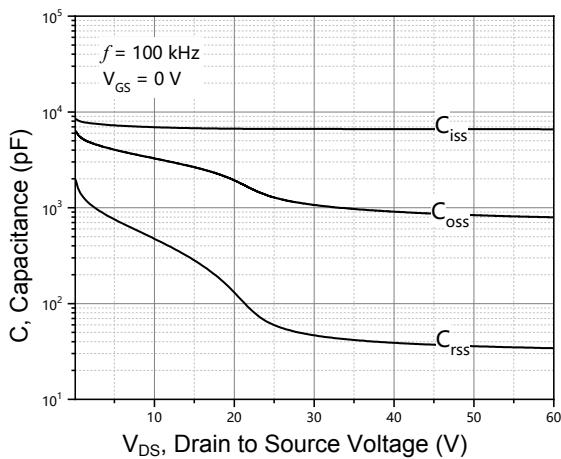


Figure 3. Typical Capacitances

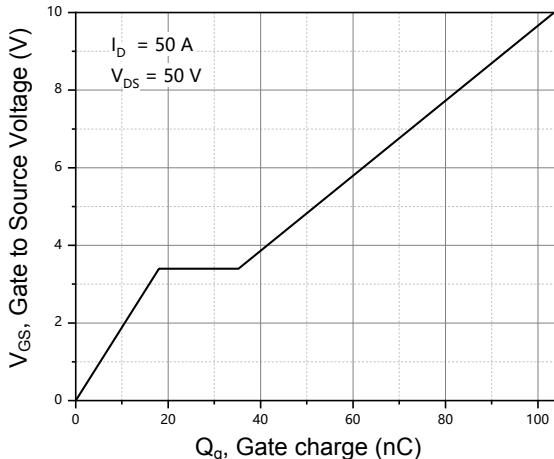


Figure 4. Typical Gate Charge

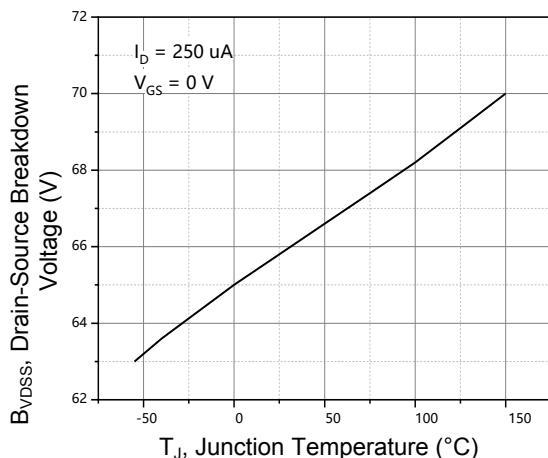


Figure 5. Drain to Source Breakdown Voltage

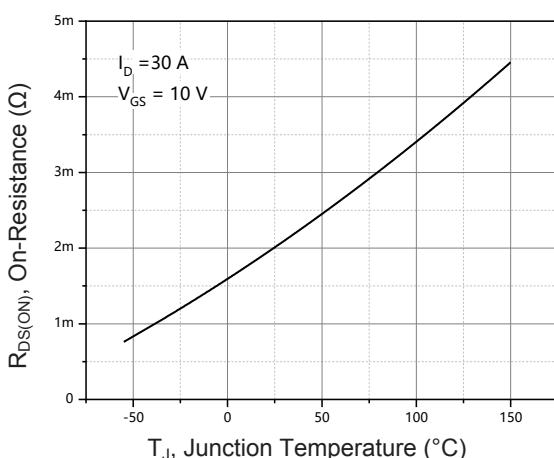


Figure 6. Drain to Source On-State Resistance

Typical Electrical and Thermal Characteristic Curves

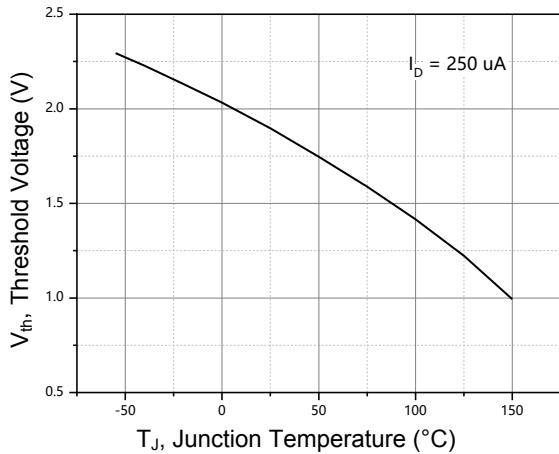


Figure 7. Threshold Voltage

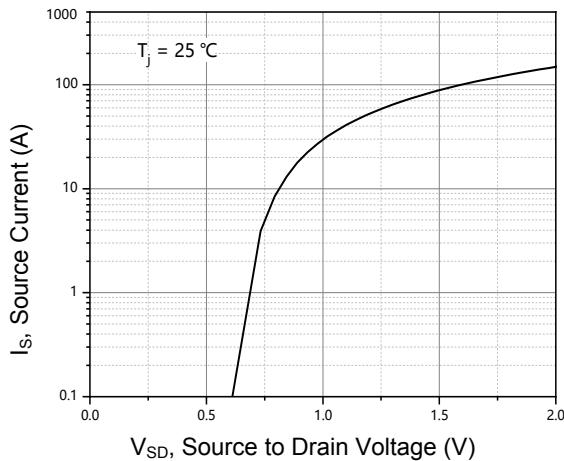


Figure 8. Forward Characteristic of Body Diode

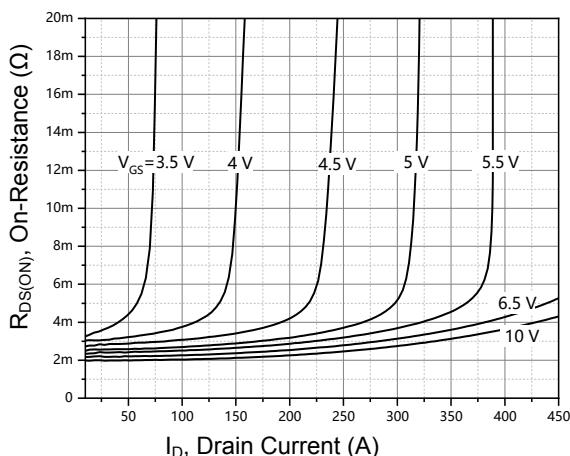


Figure 9. Drain to Source On-State Resistance

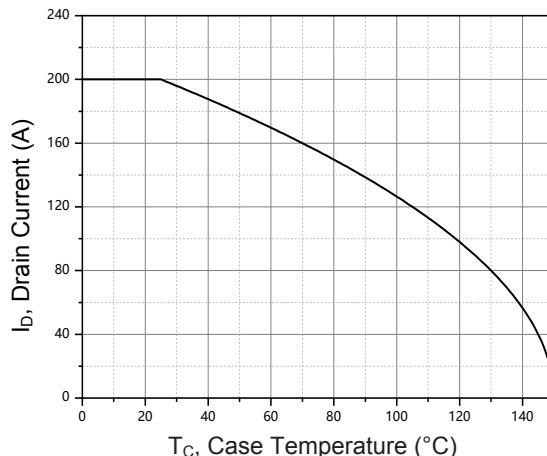


Figure 10. Drain Current

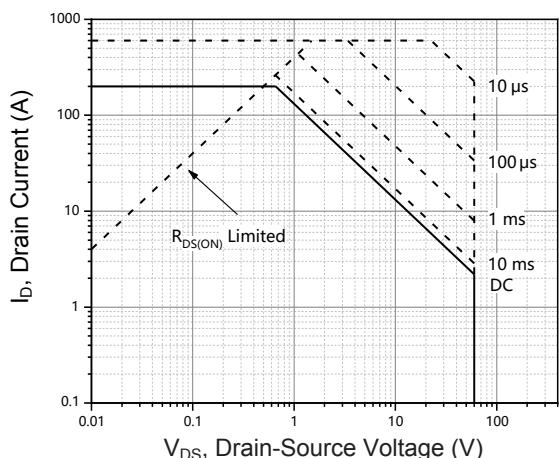


Figure 11. Safe Operation Area $T_c=25^\circ C$

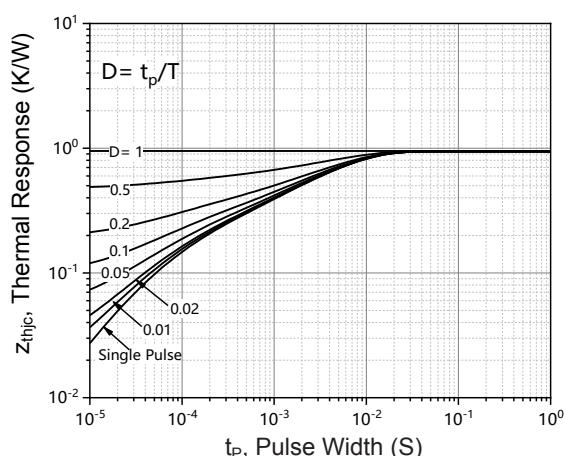
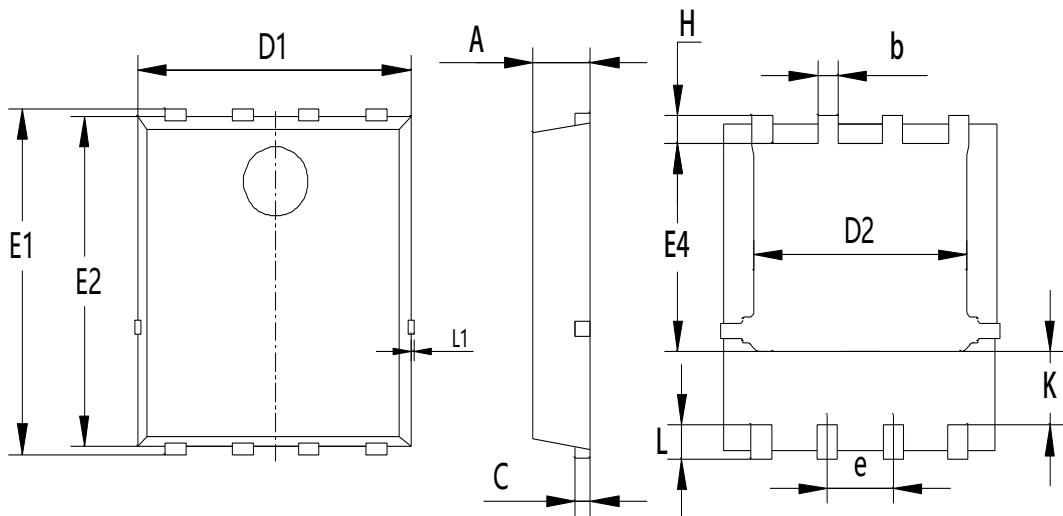


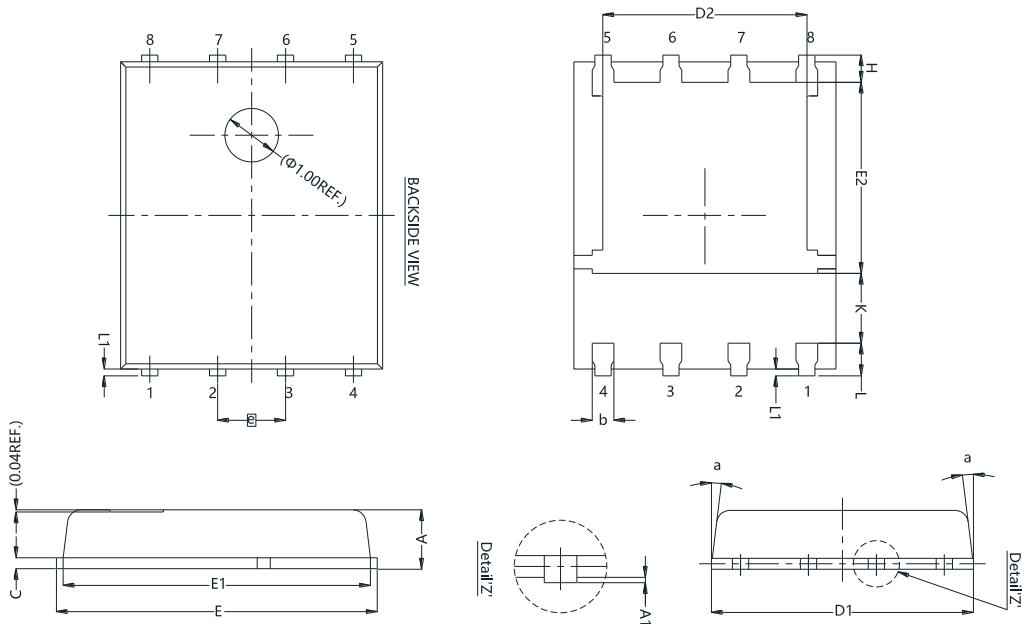
Figure 12. Max Transient Thermal Impedance

Package Outline Dimensions (PPAK5x6-P)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.00	1.20	0.039	0.047
b	0.30	0.50	0.012	0.020
c	0.15	0.36	0.006	0.014
D1	5.00	5.40	0.197	0.213
D2	3.80	4.25	0.150	0.167
e	1.17	1.37	0.046	0.054
E1	5.95	6.35	0.234	0.250
E2	5.66	6.06	0.223	0.239
E4	3.52	3.92	0.139	0.154
H	0.40	0.60	0.016	0.024
L	0.30	0.70	0.012	0.028
L1	0.12 REF		0.005 REF	
K	1.15	1.45	0.045	0.057

Package Outline Dimensions (PPAK5x6-M)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.00	0.05	0.000	0.002
b	0.33	0.51	0.013	0.020
C	0.20	0.30	0.008	0.012
D1	4.80	5.00	0.189	0.197
D2	3.61	3.96	0.142	0.156
E	5.90	6.10	0.232	0.240
E1	5.70	5.80	0.224	0.228
E2	3.38	3.78	0.133	0.149
e	1.27 BSC		0.05 BSC	
H	0.41	0.61	0.016	0.024
K	1.10	-	0.043	-
L	0.51	0.71	0.020	0.028
L1	0.06	0.20	0.002	0.008
a	0°	12°	0°	12°