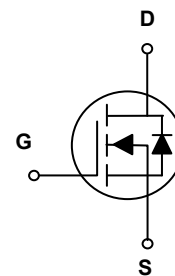
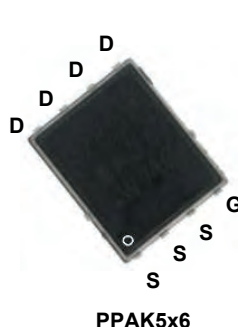


Main Product Characteristics

BV_{DSS}	80V
$R_{DS(ON)}$	5.6m Ω (Max.)
I_D	90A



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 GSFP8976B 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	Rating	Units
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$)	I_D	90	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$)		57	A
Drain Current-Pulsed ¹	I_{DM}	360	A
Single Pulse Avalanche Energy ²	E_{AS}	211	mJ
Single Pulse Avalanche Current ²	I_{AS}	65	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	124	W
Power Dissipation-De-rate above 25 $^{\circ}\text{C}$		0.98	W/ $^{\circ}\text{C}$
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62	$^{\circ}\text{C}/\text{W}$
Max. Thermal Resistance Junction to Case	$R_{\theta JC}$	1.01	$^{\circ}\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55 to +150	$^{\circ}\text{C}$

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}	$V_{GS}=0V, I_D=250\mu A$	80	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{DS}=64V, V_{GS}=0V, T_J=85^{\circ}\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	4.7	5.6	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	3	4	V
Forward Transconductance	gfs	$V_{DS}=10V, I_D=3A$	-	8	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=40V, V_{GS}=10V, I_D=45A$	-	32	50	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	9.5	15	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	10.5	15	
Turn-On Delay Time ^{3,4}	$T_{d(on)}$	$V_{DD}=40V, V_{GS}=10V, R_G=6\Omega, I_D=45A$	-	10	15	nS
Rise Time ^{3,4}	T_r		-	15	25	
Turn-Off Delay Time ^{3,4}	$T_{d(off)}$		-	30	45	
Fall Time ^{3,4}	T_f		-	35	55	
Input Capacitance	C_{iss}	$V_{DS}=40V, V_{GS}=0V, F=1\text{MHz}$	-	2200	3300	pF
Output Capacitance	C_{oss}		-	540	800	
Reverse Transfer Capacitance	C_{rss}		-	15	25	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	1.3	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	-	-	90	A
Pulsed Source Current	I_{SM}		-	-	180	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	-	-	1	V
Reverse Recovery Time	t_{rr}	$V_R=50V, I_S=10A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	-	50	-	nS
Reverse Recovery Charge	Q_{rr}		-	80	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=65A, R_G=25\Omega$, 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

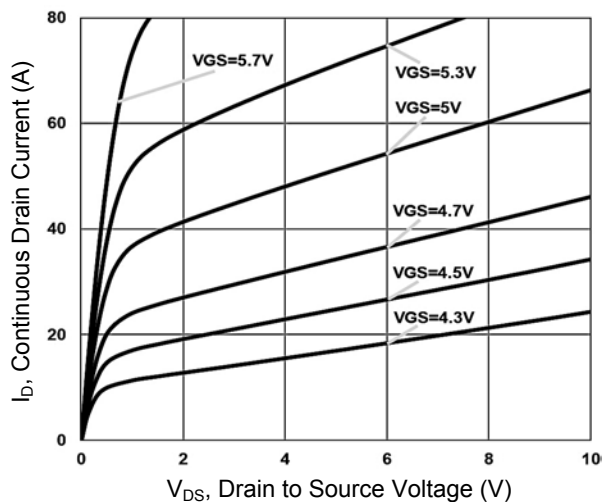


Figure 1. Typical Output Characteristics

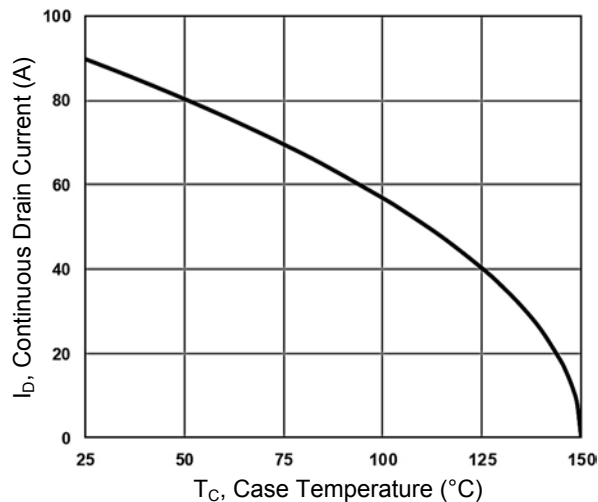


Figure 2. Continuous Drain Current vs. T_C

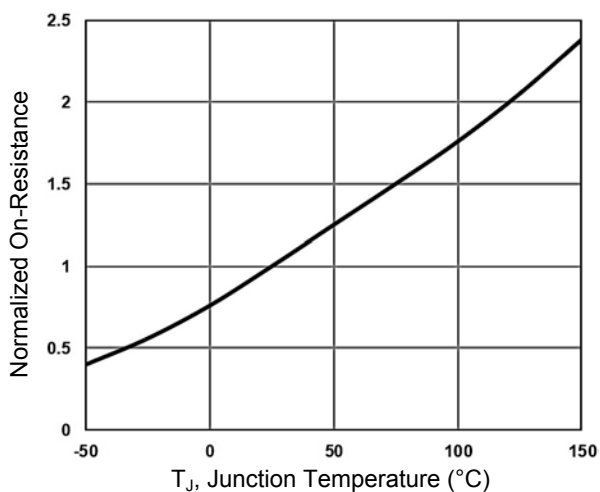


Figure 3. Normalized $R_{DS(ON)}$ vs. T_J

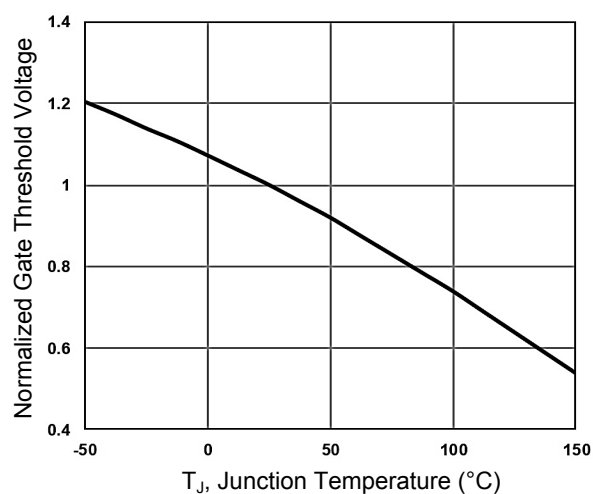


Figure 4. Normalized V_{th} vs. T_J

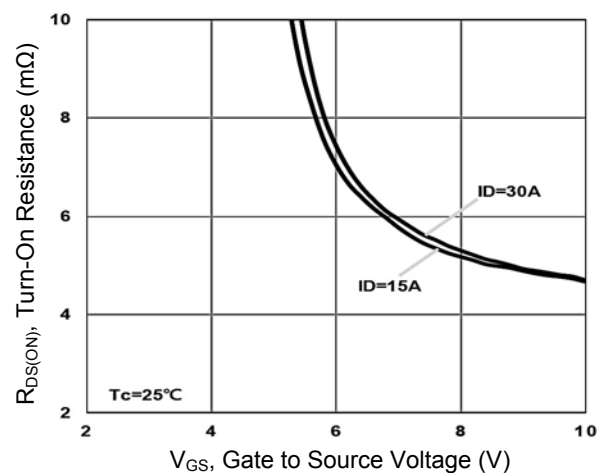


Figure 5. Turn-On Resistance vs. V_{GS}

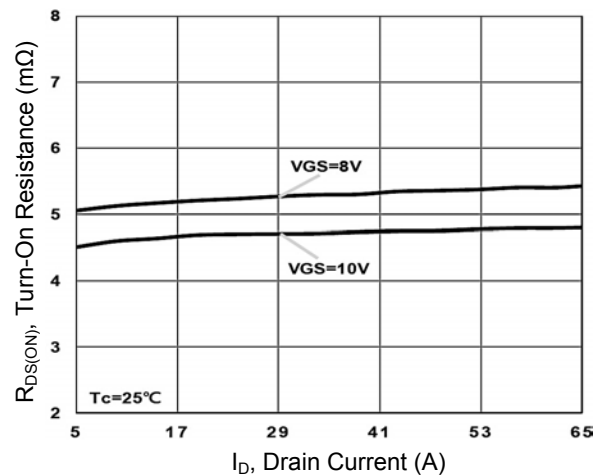


Figure 6. Turn-On Resistance vs. I_D

Typical Electrical and Thermal Characteristic Curves

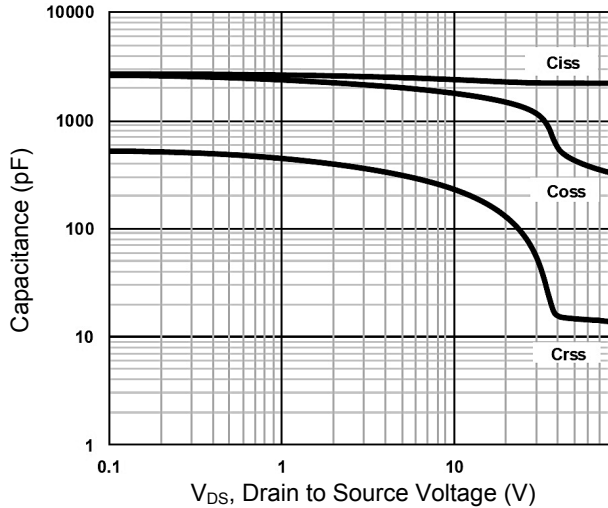


Figure 7. Capacitance Characteristics

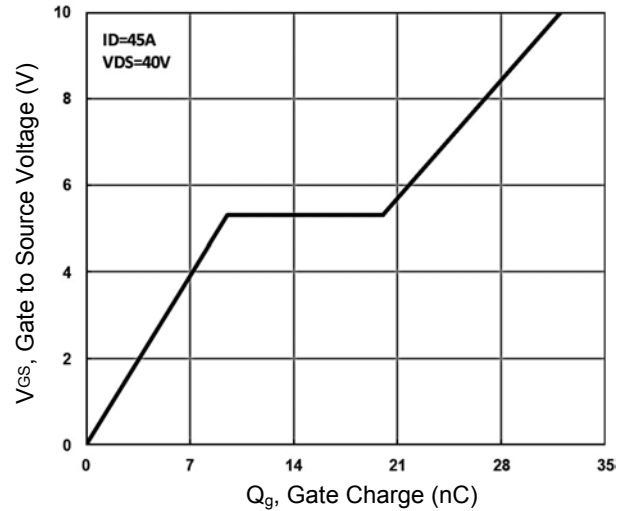


Figure 8. Gate Charge Characteristics

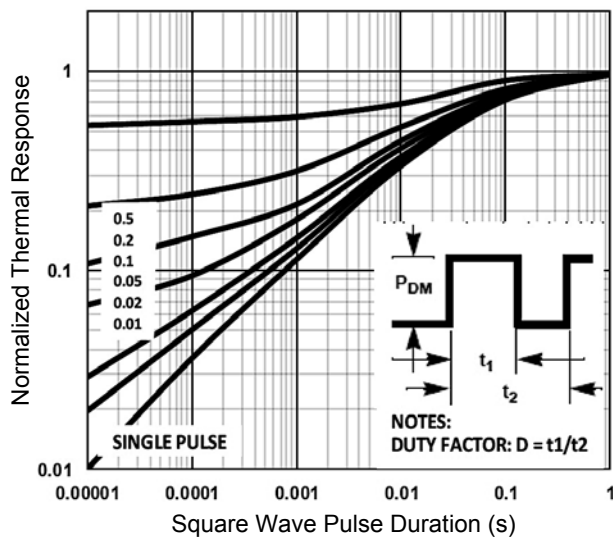


Figure 9. Normalized Transient Impedance

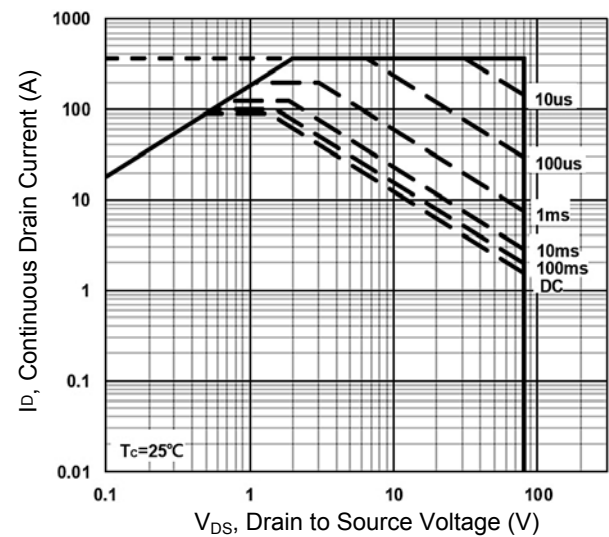
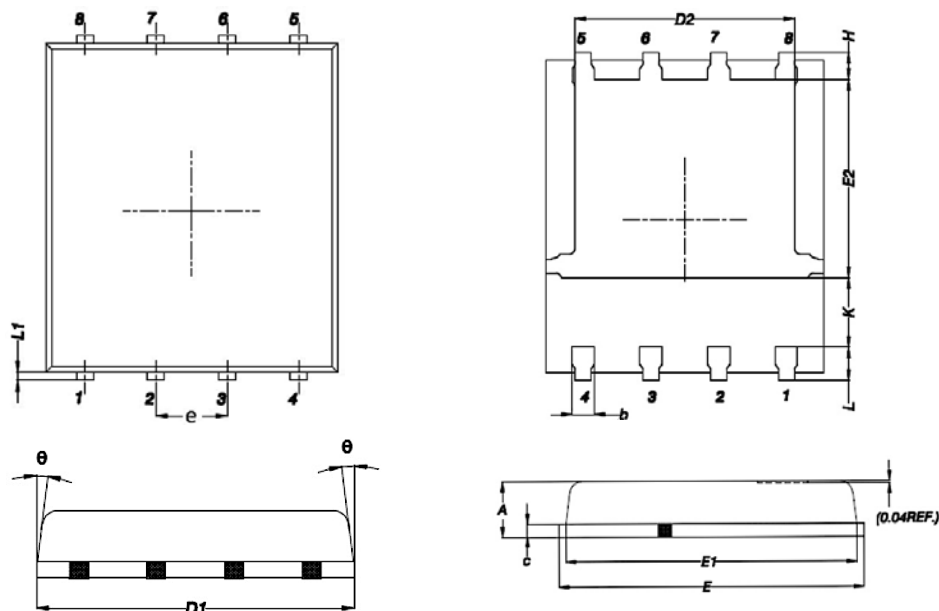


Figure 10. Maximum Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.850	1.200	0.031	0.047
b	0.300	0.510	0.012	0.020
C	0.200	0.300	0.008	0.012
D1	4.800	5.400	0.189	0.212
D2	3.610	4.310	0.142	0.170
E	5.850	6.300	0.230	0.248
E1	5.450	5.960	0.215	0.235
E2	3.300	3.920	0.130	0.154
e	1.27 BSC		0.05 BSC	
H	0.380	0.650	0.015	0.026
K	1.100	-	0.043	-
L	0.380	0.710	0.015	0.028
L1	0.050	0.250	0.002	0.009
θ	0°	12°	0°	12°

Order Information

Device	Package	Marking	Carrier	Quantity
GSFP8976B	PPAK5x6	DC8976BHX	Tape & Reel	3,000 Pcs / Reel