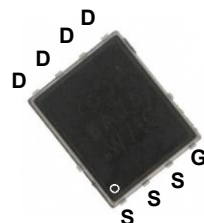
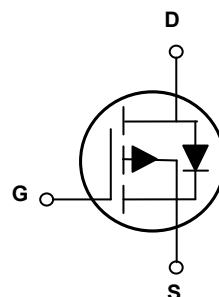


Main Product Characteristics

BV_{DSS}	-30V
$R_{DS(ON)}$	3.3mΩ
I_D	-100A



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 GSFP03101 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	Max.	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$)	I_D	-100	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$)		-63.2	
Drain Current-Pulsed ¹	I_{DM}	-400	A
Single Pulse Avalanche Energy ²	E_{AS}	320	mJ
Single Pulse Avalanche Current ²	I_{AS}	80	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	138	W
Power Dissipation-De-rate above 25°C		1.11	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.9	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-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}	$V_{GS}=0, I_D=-250\mu\text{A}$	-30	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-30\text{V}, V_{GS}=0\text{V}, T_J=25^{\circ}\text{C}$	-	-	-1	μA
		$V_{DS}=-24\text{V}, V_{GS}=0\text{V}, T_J=125^{\circ}\text{C}$	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-30\text{A}$	-	2.6	3.3	m Ω
		$V_{GS}=-4.5\text{V}, I_D=-20\text{A}$	-	3.8	5	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu\text{A}$	-1.2	-1.6	-2.2	V
Forward Transconductance	g_{fs}	$V_{DS}=-10\text{V}, I_D=-3\text{A}$	-	20	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=-15\text{V}, V_{GS}=-10\text{V}, I_D=-50\text{A}$	-	150	250	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	24	40	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	28	45	
Turn-On Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=-15\text{V}, V_{GS}=-10\text{V}, R_G=6\Omega, I_D=-50\text{A}$	-	25	40	nS
Rise Time ^{3,4}	t_r		-	35	55	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	100	150	
Fall Time ^{3,4}	t_f		-	50	80	
Input Capacitance	C_{iss}	$V_{DS}=-15\text{V}, V_{GS}=0\text{V}, F=1\text{MHz}$	-	7500	12000	pF
Output Capacitance	C_{oss}		-	1200	1800	
Reverse Transfer Capacitance	C_{rss}		-	940	1400	
Gate Resistance	R_g	$V_{GS}=0\text{V}, V_{DS}=0\text{V}, F=1\text{MHz}$	-	3.5	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current	I_S	$V_G=V_D=0\text{V}, \text{Force Current}$	-	-	-100	A
Pulsed Source Current	I_{SM}		-	-	-200	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=-1\text{A}, T_J=25^{\circ}\text{C}$	-	-	-1	V
Reverse Recovery Time	T_{rr}	$V_{GS}=0\text{V}, I_S=-20\text{A}, dI/dt=100\text{A}/\mu\text{s}, T_J=25^{\circ}\text{C}$	-	52	-	nS
Reverse Recovery Charge	Q_{rr}		-	53	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25\text{V}, V_{GS}=10\text{V}, L=0.1\text{mH}, I_{AS}=80\text{A}, R_G=25\Omega$, starting $T_J=25^{\circ}\text{C}$.
3. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
4. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

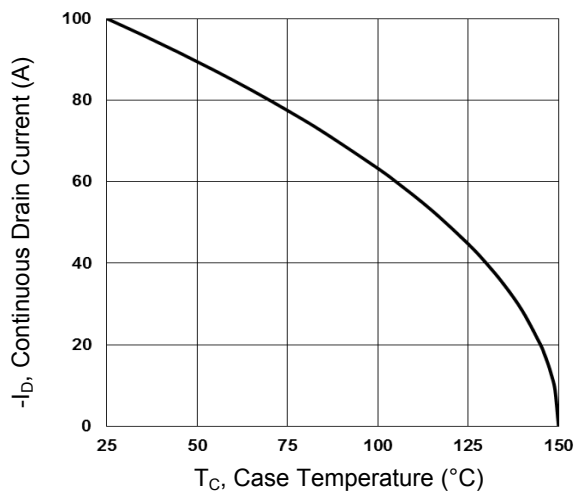


Figure 1. Continuous Drain Current vs. T_C

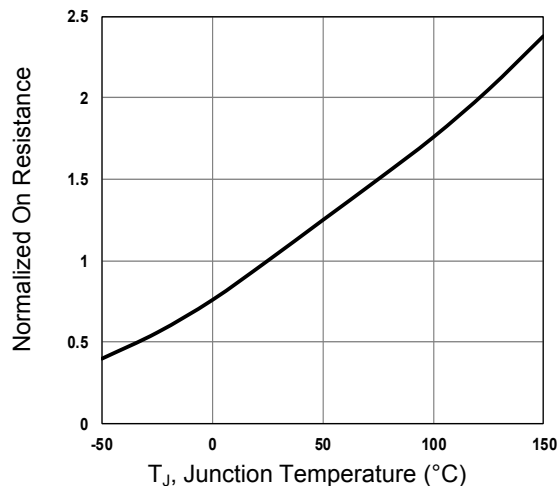


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

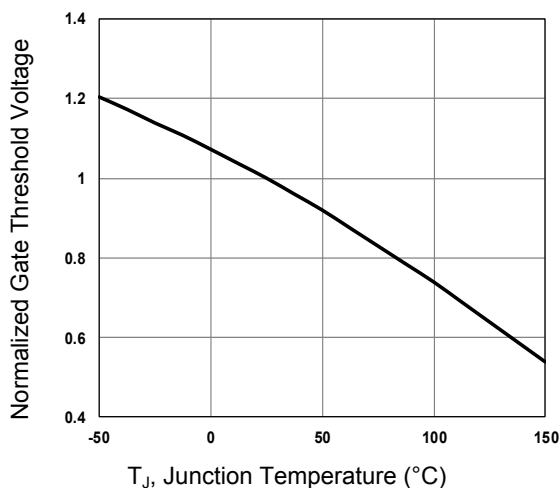


Figure 3. Normalized V_{th} vs. T_J

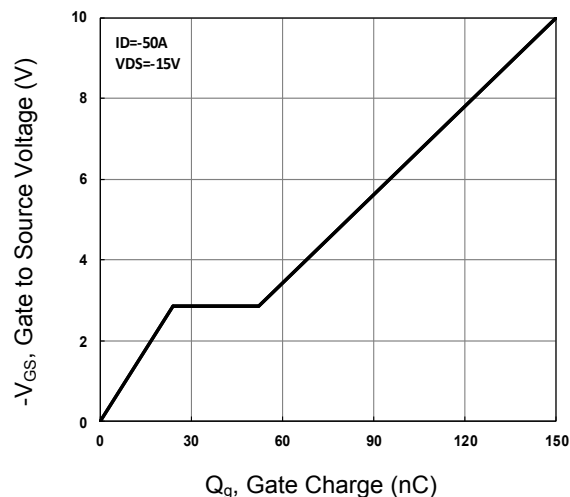


Figure 4. Gate Charge Characteristics

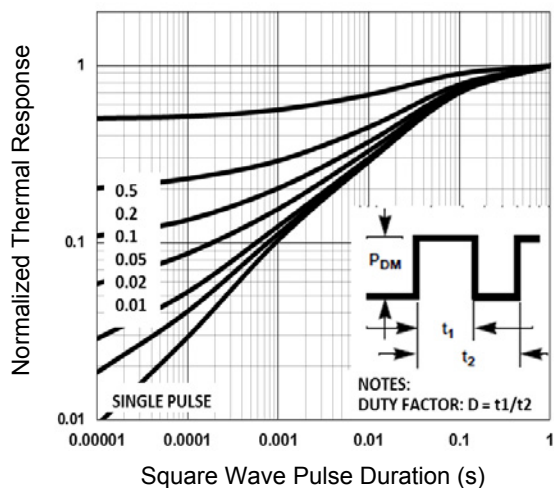


Figure 5. Normalized Transient Impedance

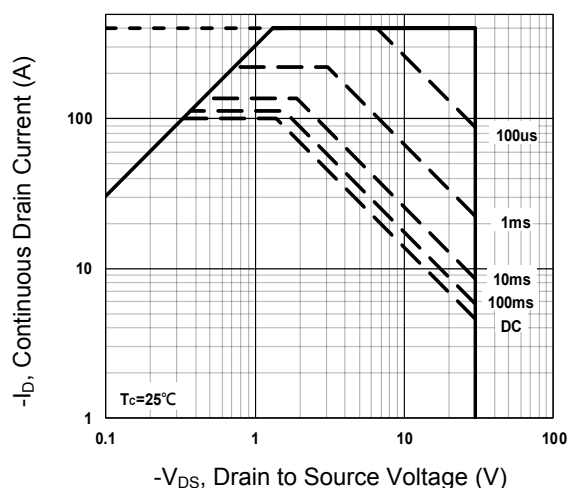


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

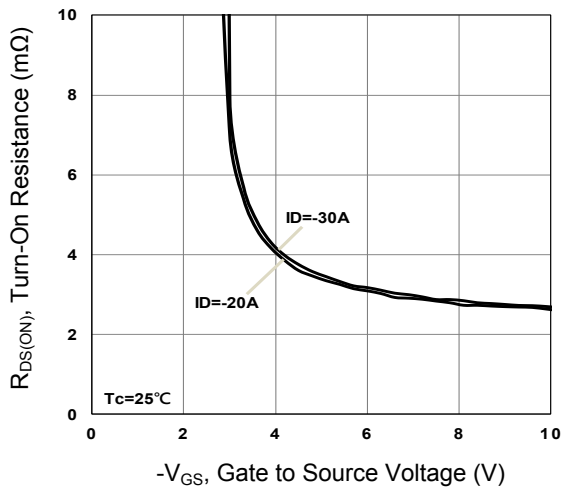


Figure 7. Turn-On Resistance vs. V_{GS}

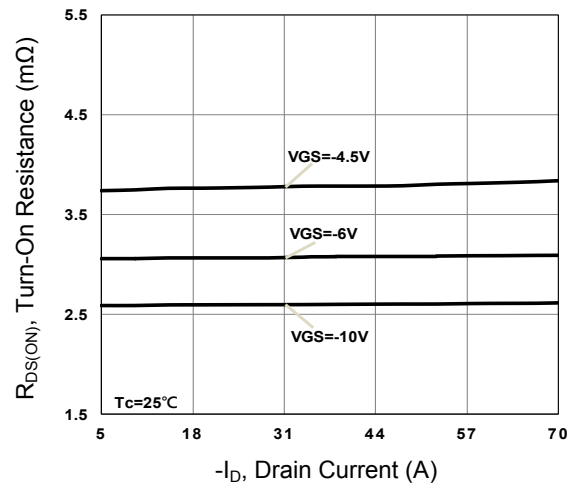


Figure 8. Turn-On Resistance vs. I_D

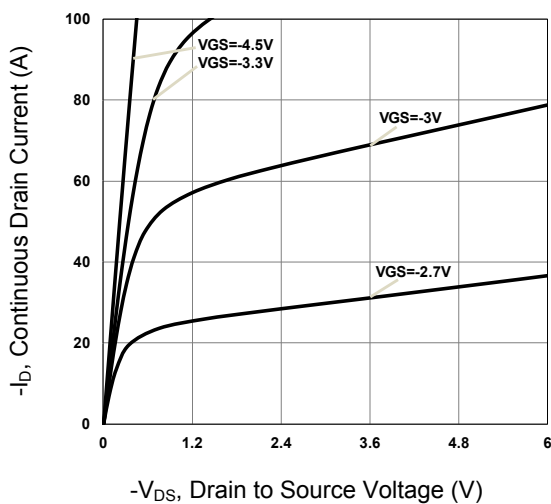


Figure 9. Typical Output Characteristics

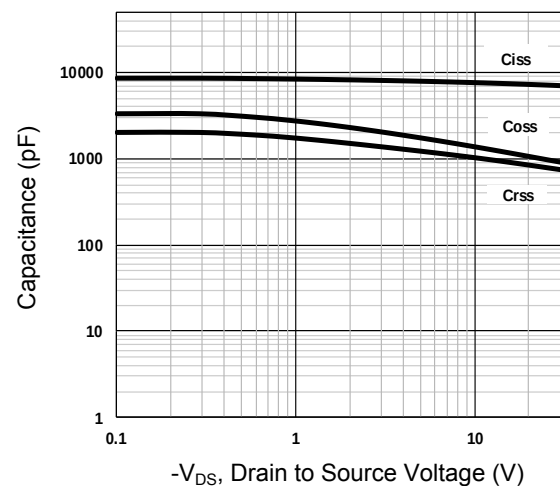
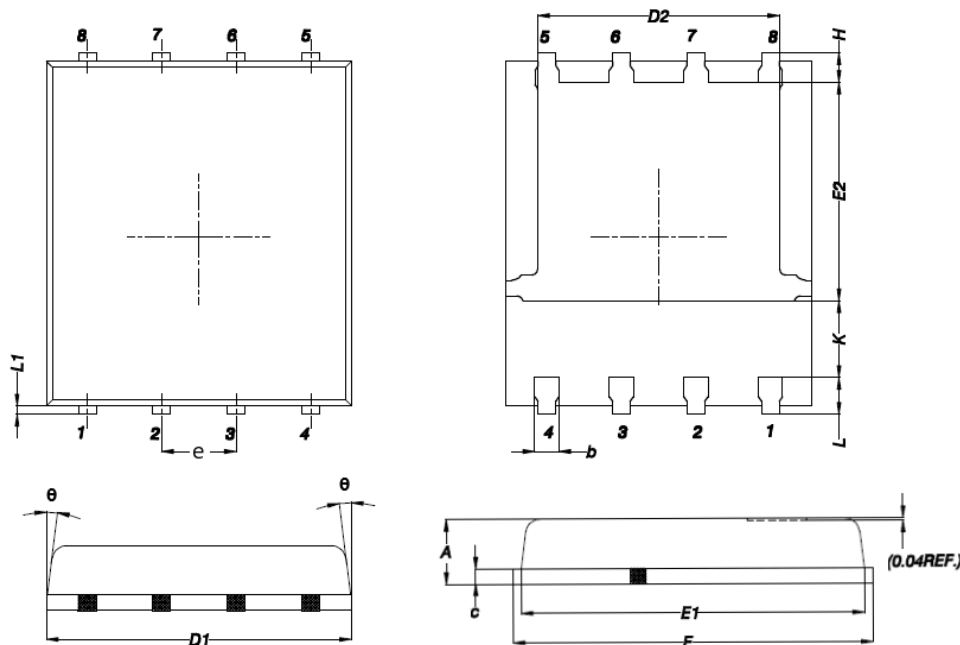


Figure 10. Capacitance Characteristics

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
GSFP03101	PPAK5x6	DC3901X	Tape & Reel	3,000 Pcs / Reel