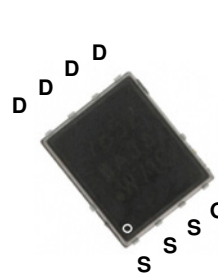
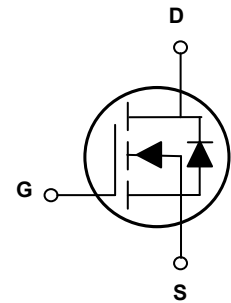


### Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	7m $\Omega$
$I_D$	80A



PPAK 5X6



Schematic Diagram

### Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switch mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



### Description

The GSFP1080 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 ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current, @Steady-State ( $T_A=25^\circ\text{C}$ )	$I_D$	80	A
Continuous Drain Current, @Steady-State ( $T_A=100^\circ\text{C}$ )		58	A
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	320	A
Power Dissipation( $T_A=25^\circ\text{C}$ )	$P_D$	105	W
Derating Factor( $T_A=25^\circ\text{C}$ )		0.84	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy <sup>4</sup>	$E_{AS}$	387	mJ
Junction-to-Case Thermal Resistance @Steady-State	$R_{\theta JC}$	1.19	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^\circ\text{C}$

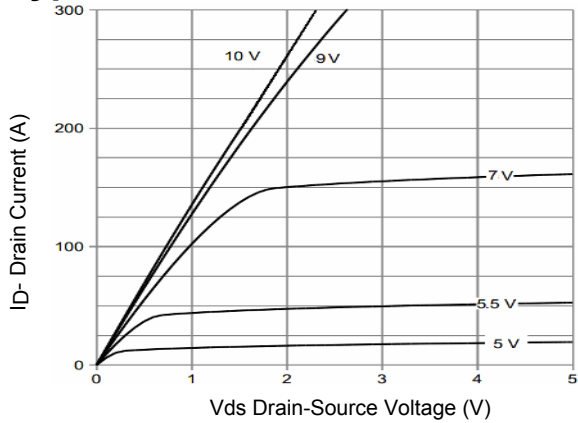
### Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1	$\mu A$
		$T_J=125^\circ C$	-	-	50	
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{GS}=+20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=40A$	-	6.4	7	m $\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=40A$	-	60	-	S
Input Capacitance	$C_{iss}$	$V_{DS}=50V, V_{GS}=0V, F=1.0MHz$	-	3070	-	$\mu F$
Output Capacitance	$C_{oss}$		-	290	-	
Reverse Transfer Capacitance	$C_{rss}$		-	23	-	
Total Gate Charge	$Q_g$	$V_{DS}=50V, I_D=40A, V_{GS}=10V$	-	53	-	nC
Gate-Source Charge	$Q_{gs}$		-	18	-	
Gate-to-Drain("Miller") Charge	$Q_{gd}$		-	16	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=50V, I_D=40A, R_L=1.3\Omega, V_{GS}=10V, R_{GEN}=1.6\Omega$	-	15	-	nS
Rise Time	$t_r$		-	10	-	
Turn-Off Delay Time	$t_{d(off)}$		-	34	-	
Fall Time	$t_f$		-	8	-	
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode) <sup>2</sup>	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	80	A
Pulsed Source-Drain Current (Body Diode)	$I_{SM}$		-	-	160	A
Diode Forward Voltage	$V_{SD}$	$I_S=40A, V_{GS}=0V$	-	0.88	1.2	V
Reverse Recovery Time	$t_{rr}$	$T_J=25^\circ C, I_S=I_F=40A, di/dt=100A/\mu s$	-	60	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	106	-	nC

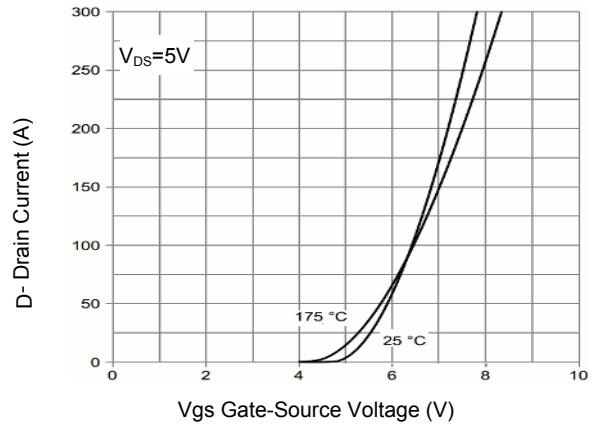
**Notes**

1. Repetitive Rating: pulse width limited by maximum junction temperature.
2. Pulse test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .
3. Guaranteed by design
4.  $E_{AS}$  condition:  $T_J=25^\circ C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega$ .

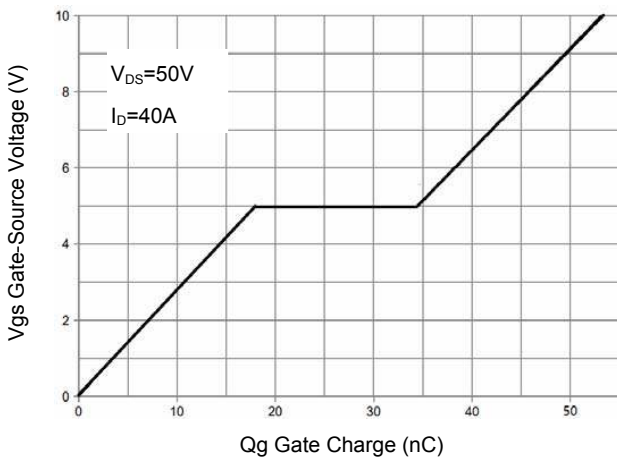
**Typical Electrical and Thermal Characteristic Curves**



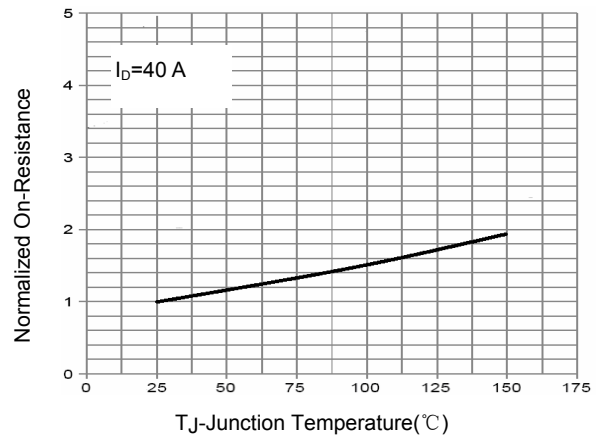
**Figure 1. Typical Output Characteristics**



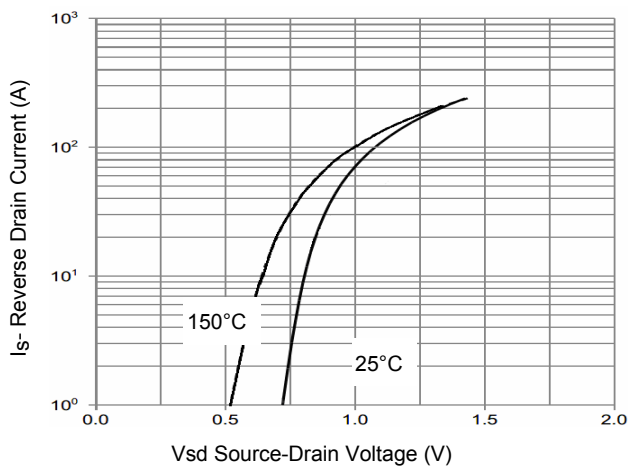
**Figure 2. Transfer Characteristics**



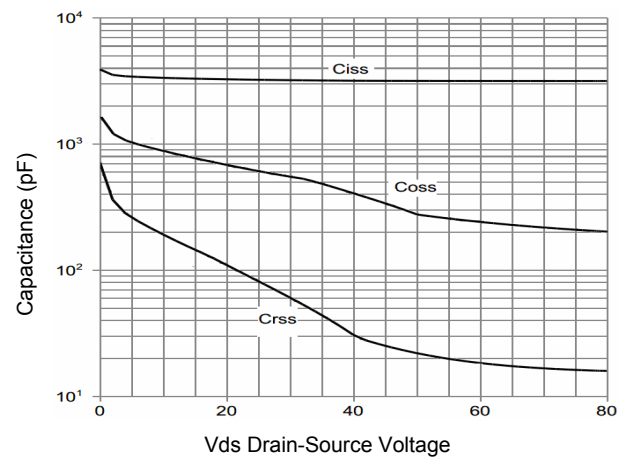
**Figure 3. Gate Charge**



**Figure 4. Normalized On-Resistance Vs. Junction Temperature**

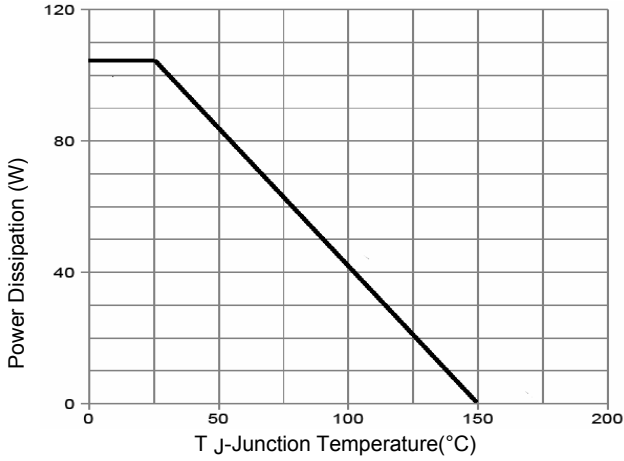


**Figure 5. Source-Drain Diodes Forward**

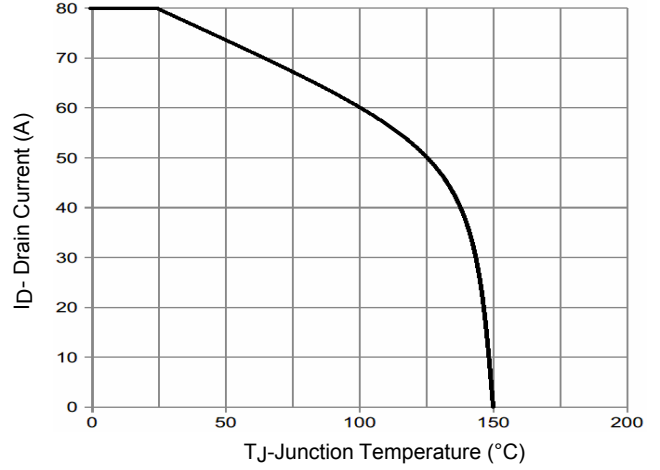


**Figure 6. Typical Capacitance vs. Drain-to-Source Voltage**

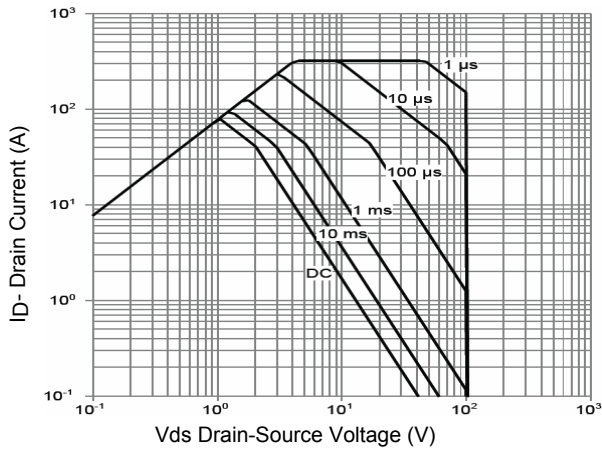
**Typical Electrical and Thermal Characteristic Curves**



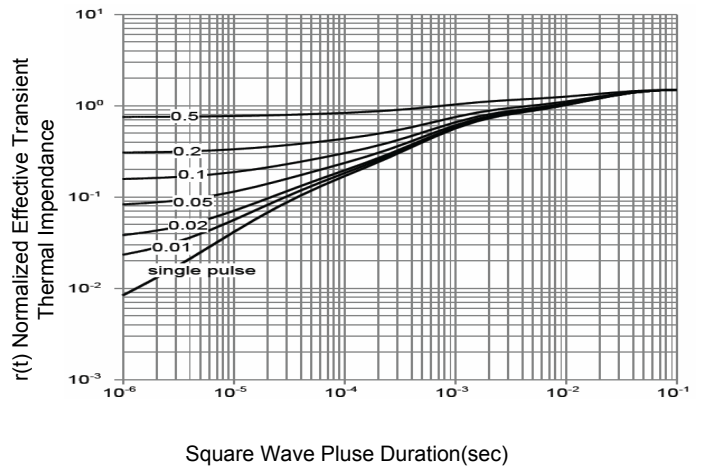
**Figure 7. Power Derating**



**Figure 8. Current Derating**

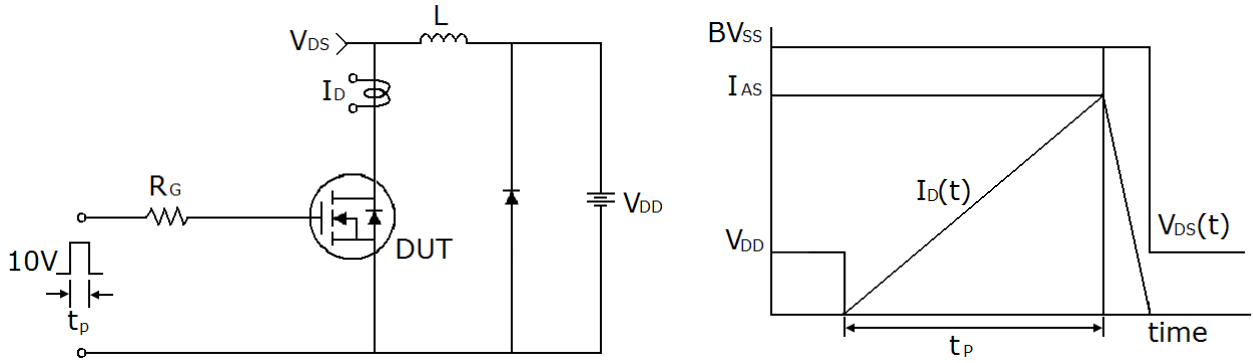


**Figure 9. Safe Operation Area**

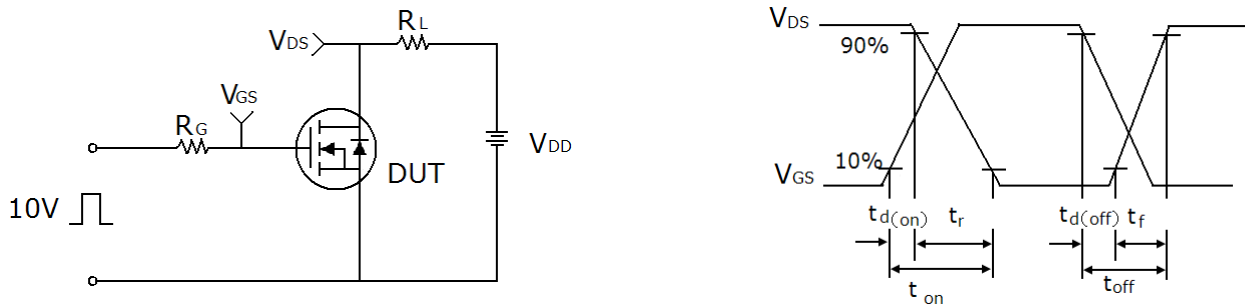


**Figure 10. Normalized Maximum Transient Thermal Impedance**

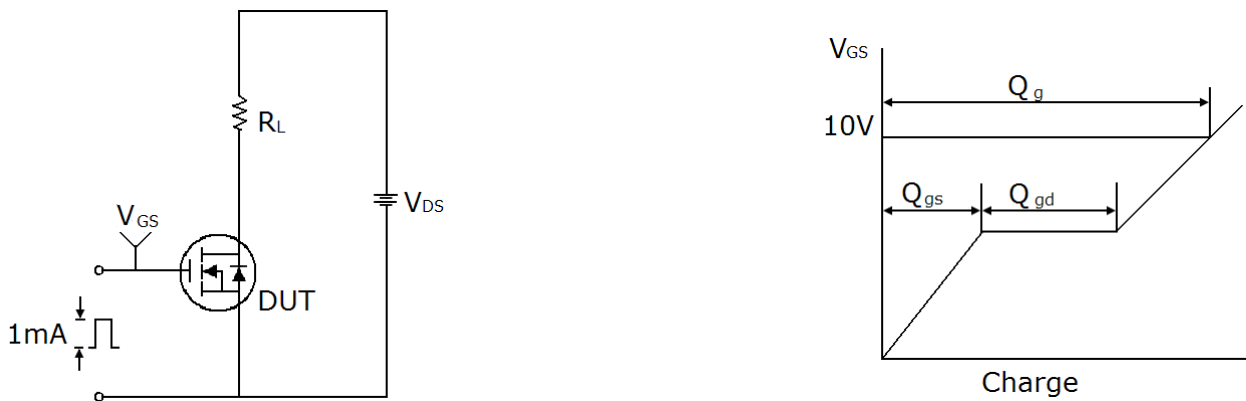
### Typical Electrical and Thermal Characteristic Curves



**Figure 11. Unclamped Inductive Switching Test Circuit & Waveforms**

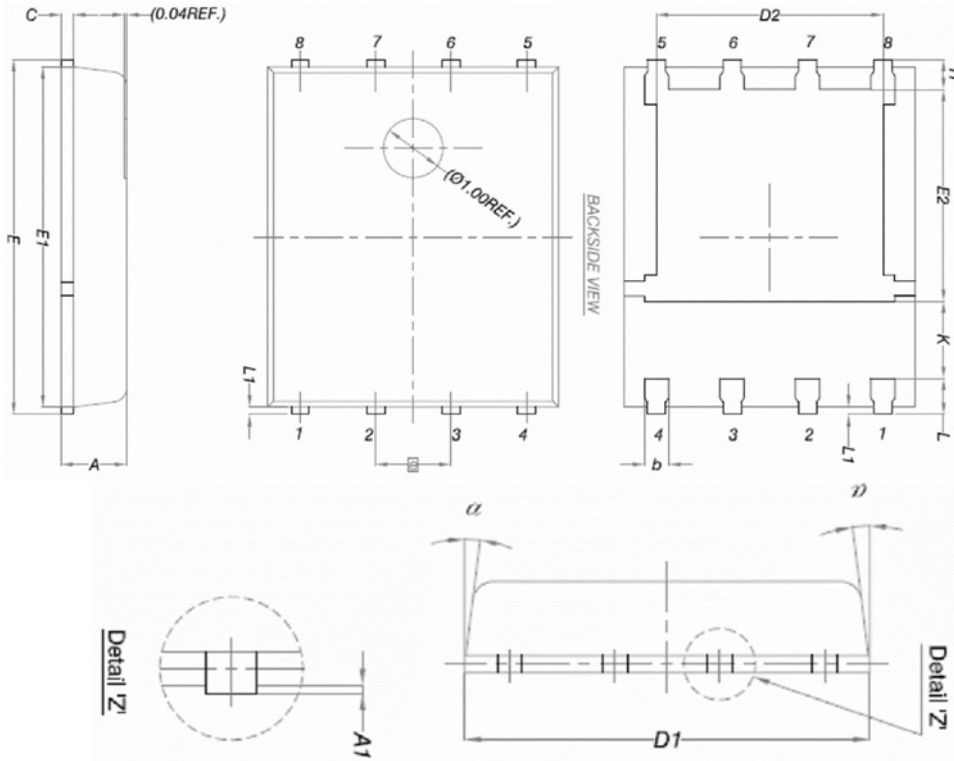


**Figure 12. Resistive Switching Test Circuit & Waveforms**



**Figure 13. Gate Charge Test Circuit & Waveform**

## Package Outline Dimensions (PPAK5X6-8L)



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
α	0°	-	12°

