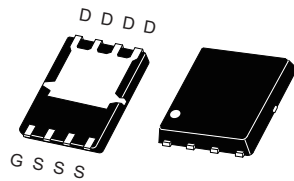


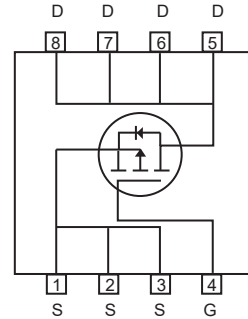
## P-Channel Enhancement Mode Field Effect Transistor

### FEATURES

- -200V, -12.5A,  $R_{DS(ON)} = 0.36\Omega @V_{GS} = -10V$ .
- Super high dense cell design for extremely low  $R_{DS(ON)}$ .
- High power and current handling capability.
- RoHS compliant.
- Surface mount Package.



P-PAK 5X6



### ABSOLUTE MAXIMUM RATINGS $T_C = 25^\circ\text{C}$ unless otherwise noted

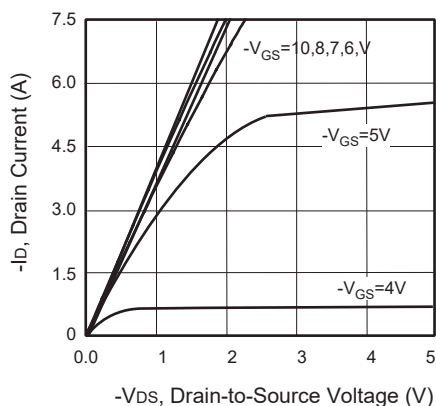
Parameter	Symbol	Limit	Units
Drain-Source Voltage	$V_{DS}$	-200	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	V
Drain Current-Continuous	$I_D @ R_{\theta JC}$	-12.5	A
Drain Current-Continuous	$I_D @ R_{\theta JA}$	-3.2	A
Drain Current-Pulsed <sup>a</sup>	$I_{DM} @ R_{\theta JC}$	-50	A
Drain Current-Pulsed <sup>a</sup>	$I_{DM} @ R_{\theta JA}$	-12.8	A
Maximum Power Dissipation	$P_D$	96	W
Single Pulsed Avalanche Energy <sup>e</sup>	$E_{AS}$	165	mJ
Single Pulsed Avalanche Current <sup>e</sup>	$I_{AS}$	10.5	A
Operating and Store Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

### Thermal Characteristics

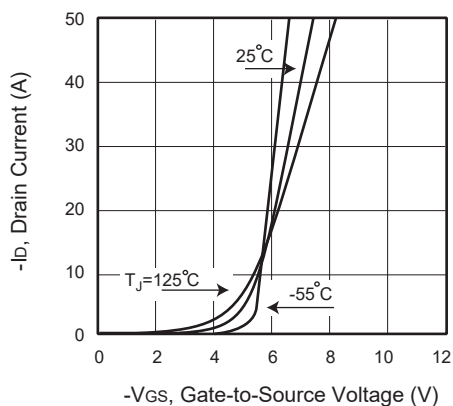
Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.3	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient <sup>b</sup>	$R_{\theta JA}$	20	$^\circ\text{C/W}$

## Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

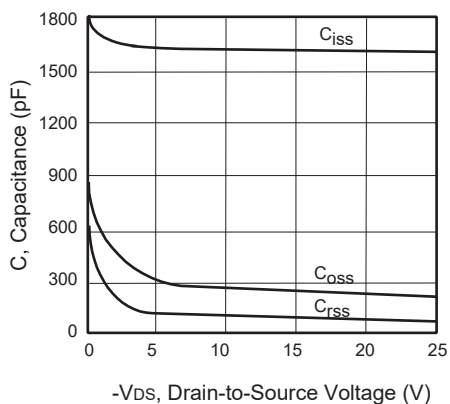
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-200			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -200V, V_{GS} = 0V$			-1	$\mu A$
Gate Body Leakage Current, Forward	$I_{GSSF}$	$V_{GS} = 30V, V_{DS} = 0V$			100	nA
Gate Body Leakage Current, Reverse	$I_{GSSR}$	$V_{GS} = -30V, V_{DS} = 0V$			-100	nA
<b>On Characteristics <sup>c</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = -250\mu A$	-2		-4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -5.2A$		0.28	0.36	$\Omega$
<b>Dynamic Characteristics <sup>d</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -25V, V_{GS} = 0V, f = 1.0\text{ MHz}$		1620		pF
Output Capacitance	$C_{oss}$			240		pF
Reverse Transfer Capacitance	$C_{rss}$			50		pF
<b>Switching Characteristics <sup>d</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -100V, I_D = -13.5A, V_{GS} = -10V, R_{GEN} = 25\Omega$		28		ns
Turn-On Rise Time	$t_r$			74		ns
Turn-Off Delay Time	$t_{d(off)}$			260		ns
Turn-Off Fall Time	$t_f$			120		ns
Total Gate Charge	$Q_g$	$V_{DD} = -160V, I_D = -13.5A, V_{GS} = -10V$		52		nC
Gate-Source Charge	$Q_{gs}$			9		nC
Gate-Drain Charge	$Q_{gd}$			25		nC
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Drain-Source Diode Forward Current <sup>b</sup>	$I_S$				-12.5	A
Drain-Source Diode Forward Voltage <sup>c</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = -12.5A$			-1.2	V
<b>Notes :</b> a.Repetitive Rating : Pulse width limited by maximum junction temperature. b.Surface Mounted on FR4 Board, $t \leq 10\text{ sec}$ . c.Pulse Test : Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 2\%$ . d.Guaranteed by design, not subject to production testing. e.L = 3mH, $I_{AS} = 10.5A, V_{DD} = 25V, R_G = 25\Omega$ , Starting $T_J = 25^\circ\text{C}$ .						



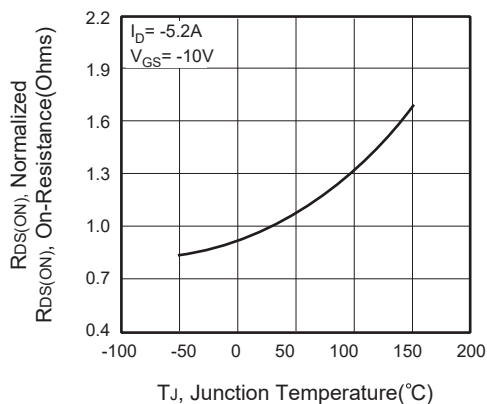
**Figure 1. Output Characteristics**



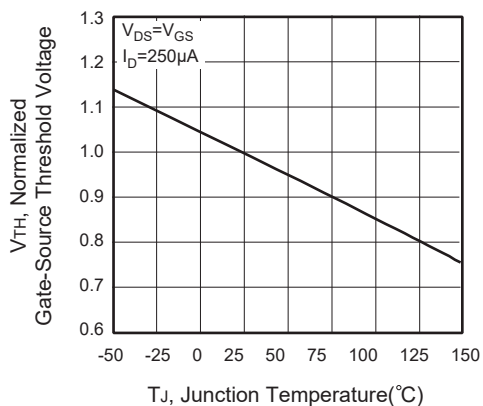
**Figure 2. Transfer Characteristics**



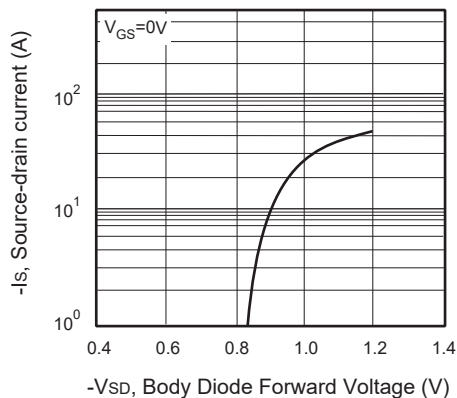
**Figure 3. Capacitance**



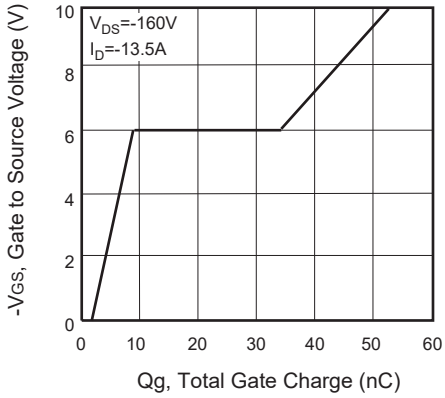
**Figure 4. On-Resistance Variation with Temperature**



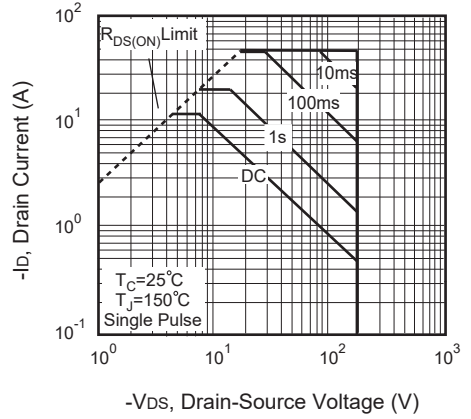
**Figure 5. Gate Threshold Variation with Temperature**



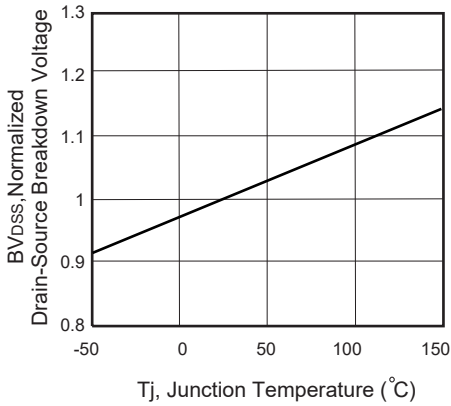
**Figure 6. Body Diode Forward Voltage Variation with Source Current**



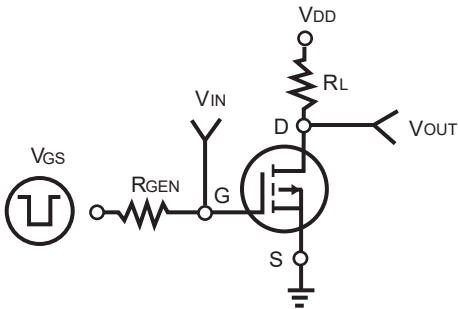
**Figure 7. Gate Charge**



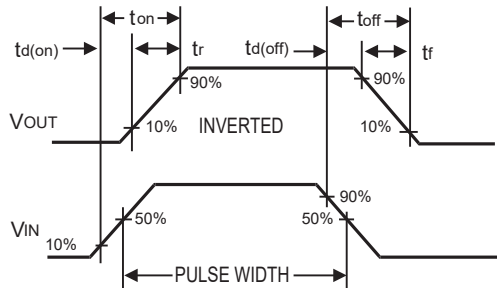
**Figure 8. Maximum Safe Operating Area**



**Figure 9. Breakdown Voltage Variation VS Temperature**



**Figure 10. Switching Test Circuit**



**Figure 11. Switching Waveforms**

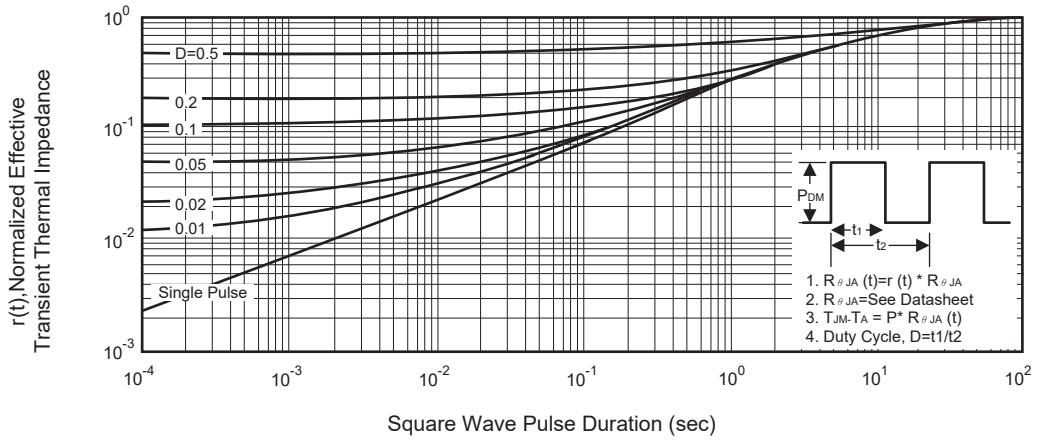
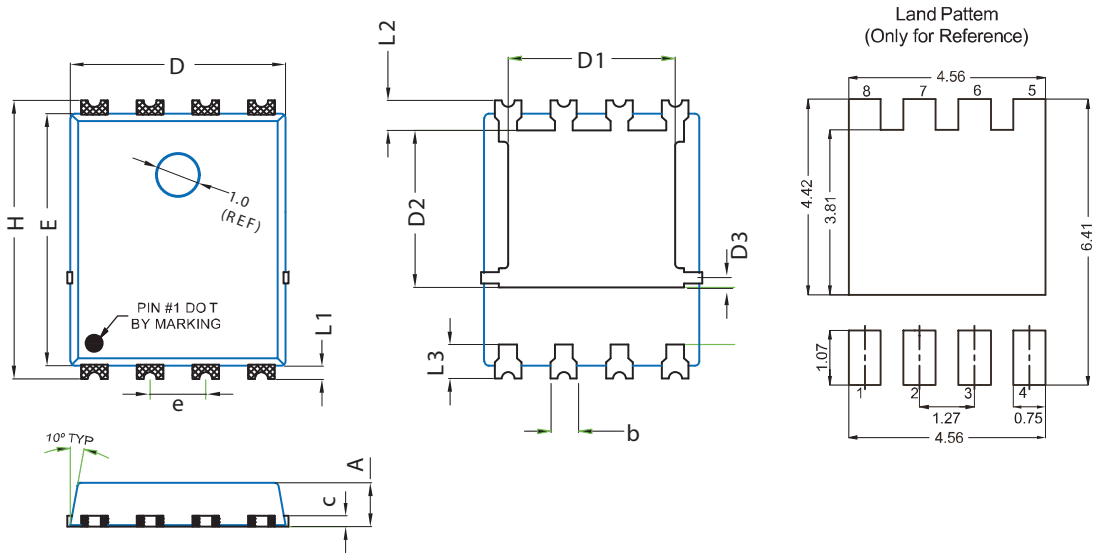


Figure 11. Normalized Thermal Transient Impedance Curve

## P-PAK5X6 產品外觀尺寸圖 (Product Outline Dimension)

### SINGLE PAD 尺寸圖



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.100	0.035	0.043
b	0.520	0.750	0.020	0.030
c	0.20	0.30	0.008	0.012
D	4.800	5.000	0.189	0.197
D1	3.610	3.960	0.142	0.156
D2	3.380	3.780	0.133	0.149
D3	0.200	0.300	0.008	0.012
E	5.700	5.800	0.224	0.228
e	1.270 TYP		0.050 TYP	
H	6.250	6.450	0.246	0.254
L1	0.250	0.400	0.010	0.016
L2	0.580	0.780	0.023	0.031
L3	0.680	0.880	0.027	0.035