UNIKC Semiconductor

RoHS Compliant

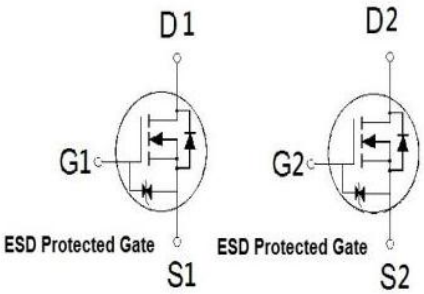
PE614DX

Dual N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
20V	12.5mΩ @V_{GS} = 4.5V	30A

PDFN 3x3P



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current[3]	T_C= 25 °C	I_D	30	A
	T_C = 100 °C		19	
	T_A = 25 °C		11	
	T_A= 70 °C		9	
Pulsed Drain Current[1]		I_{DM}	80	
Avalanche Current		I_{AS}	22	
Avalanche Energy	L = 0.1mH	E_{AS}	24	mJ
Power Dissipation	T_C= 25 °C	P_D	17.8	W
	T_C = 100 °C		7	
	T_A = 25 °C		2.5	
	T_A= 70°C		1.6	
ESD Class	HBM		2kV	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		7	°C / W
Junction-to-Ambient[2]	$R_{\theta JA}$		50	

[1]Pulse width limited by maximum junction temperature.

[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C.

[3]Package limitation current is 7A.

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.35	0.67	1	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±8V			30	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16V, V_{GS} = 0V			1	
		V_{DS} =10V, V_{GS} = 0V, T_J = 125°C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} =4.5V, I_D =3A	8.5	10	12.5	mΩ
		V_{GS} = 3.9V, I_D = 3A	8.7	10.2	13.7	
		V_{GS} = 2.5V, I_D = 3A	10	11.5	15	
		V_{GS} = 1.8V, I_D = 3A	12.7	14.2	20.2	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 3A		35		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz		1105		pF
Output Capacitance	C_{oss}			198		
Reverse Transfer Capacitance	C_{rss}			169		
Total Gate Charge[2]	Q_g(V_{GS} = 4.5V)	V_{DS} =10V,I_D = 3A		17		nC
	Q_g(V_{GS} = 3.9V)			15		
Gate-Source Charge[2]	Q_{gs}			1.4		
Gate-Drain Charge[2]	Q_{gd}			5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 10V, I_D ≅ 3A, V_{GS} = 4.5V, R_{GEN} = 6Ω		22		nS
Rise Time[2]	t_r			34		
Turn-Off Delay Time[2]	$t_{d(off)}$			51		
Fall Time[2]	t_f			17		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				14.8	A
Forward Voltage[1]	V_{SD}	I_F = 3A, V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 3A, dI_F/dt = 100A / μS, V_{GS} = 0V		14		nS
Reverse Recovery Charge	Q_{rr}			5.4		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

[3]Package limitation current is 7A.

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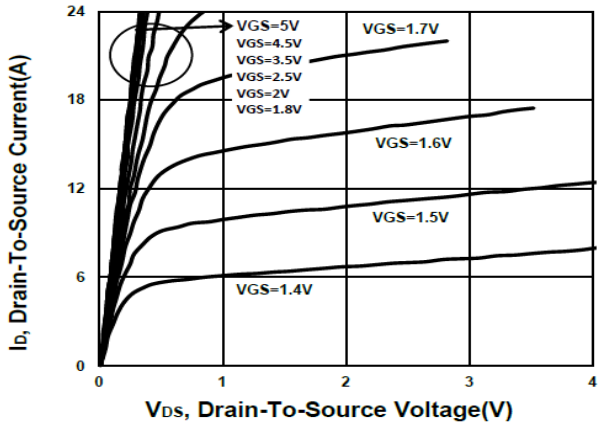
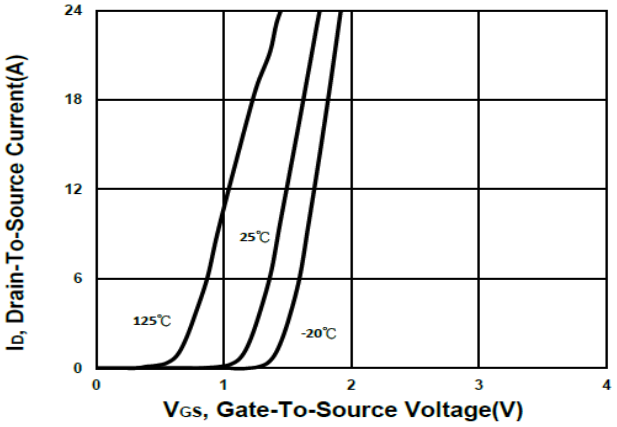
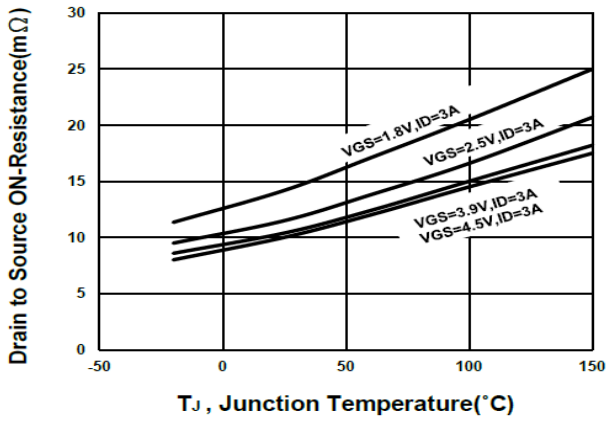
Output Characteristics



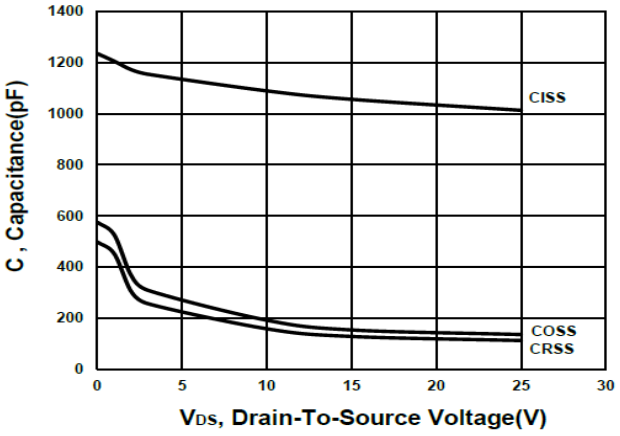
Transfer Characteristics



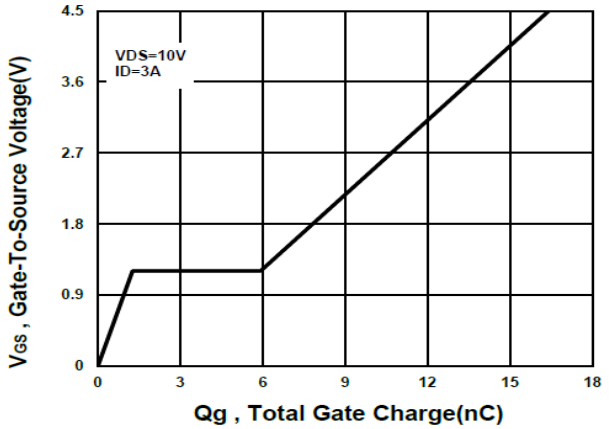
On-Resistance VS Temperature



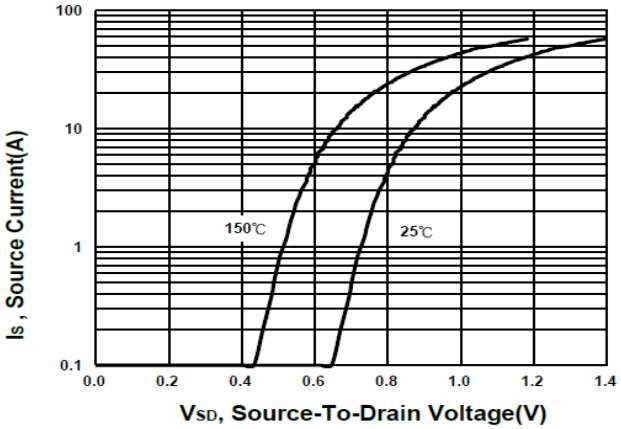
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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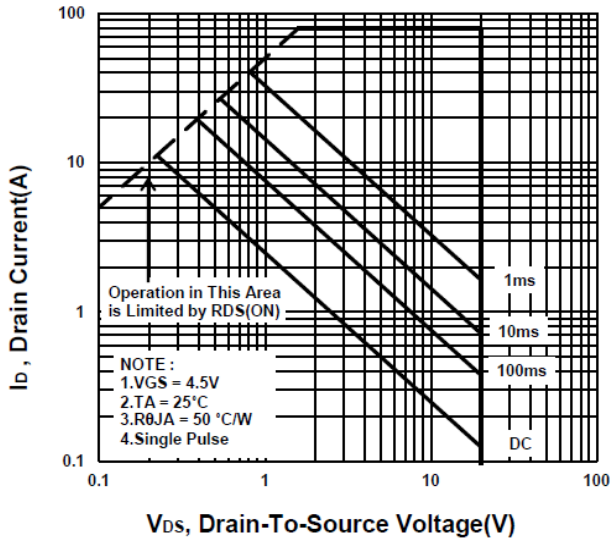
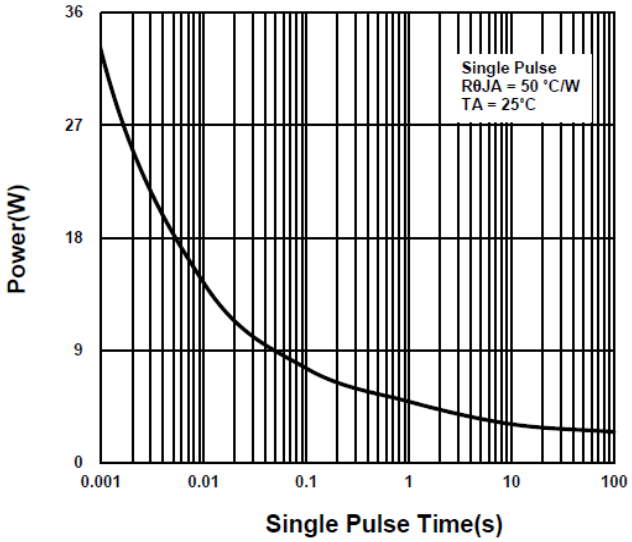
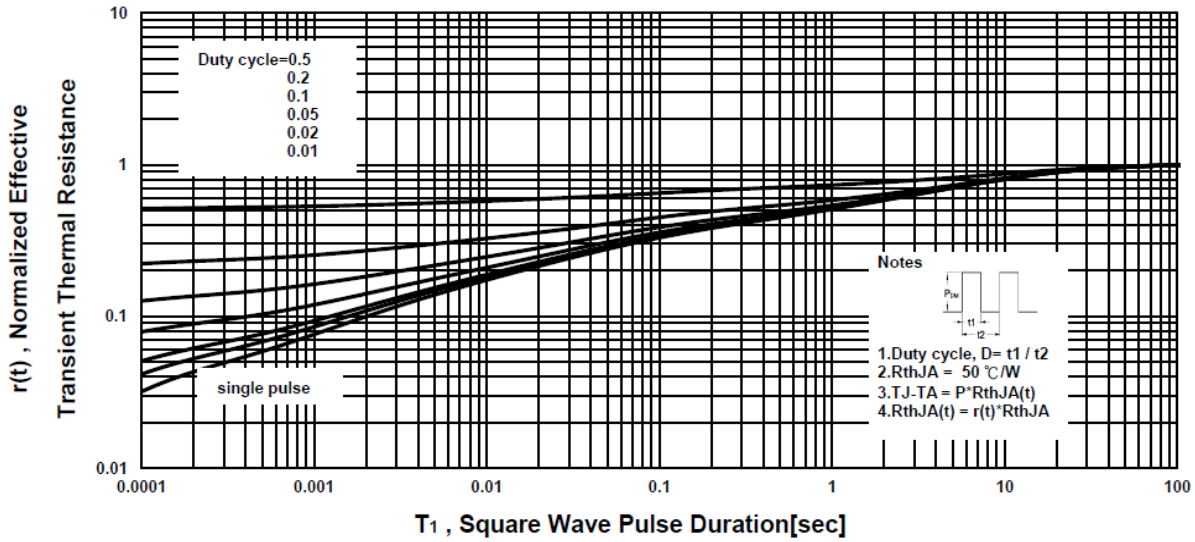
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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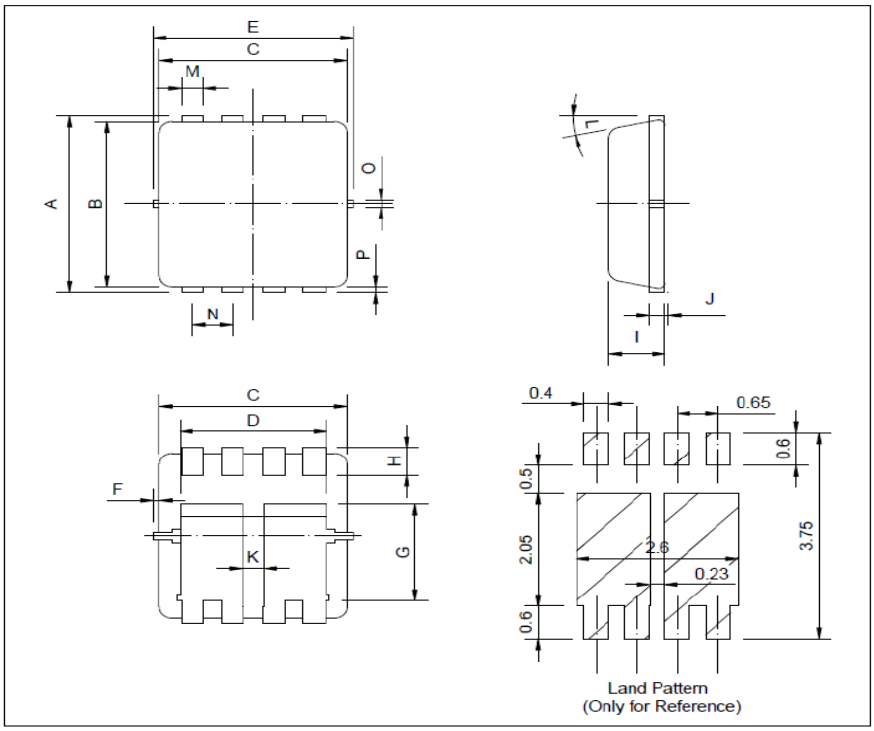
Package Dimension

PDFN 3x3P(Dual) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	3.2	3.3	3.4	I	0.7	0.75	0.8
B	2.95	3.05	3.15	J	0.1	0.15	0.25
C	2.95	3.05	3.15	K	0.35		
D		2.29		L	0°	10°	12°
E	3.2	3.3	3.4	M	0.27	0.32	0.37
F		0.13		N		0.65	
G	1.7	1.83	1.96	O		0.2	
H	0.3	0.4	0.5	P	0.06	0.13	0.2



*因为各家封装模具不同而外观略有所差异，不影响电性及Layout。