

PE601CA

N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
30V	22m Ω @ $V_{GS} = 10V$	20A	N
-30V	28m Ω @ $V_{GS} = -10V$	-19A	P

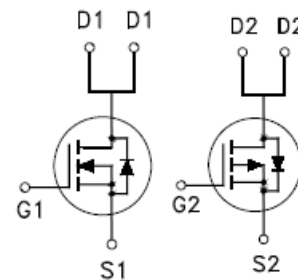


S1 G1 S2 G2

PDFN 3X3P

100% UIS Tested

100% Rg Tested



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	N	30	V
			P	-30	
Gate-Source Voltage		V_{GS}	N	± 20	V
			P	± 20	
Continuous Drain Current ⁴	$T_C = 25\text{ }^\circ\text{C}$	I_D	N	20	A
			P	-19	
	$T_C = 100\text{ }^\circ\text{C}$		N	13	
			P	-12	
	$T_A = 25\text{ }^\circ\text{C}$		N	8.1	
			P	-7.4	
	$T_A = 70\text{ }^\circ\text{C}$		N	6.5	
			P	-5.9	
Pulsed Drain Current ¹		I_{DM}	N	40	
			P	-35	
Avalanche Current		I_{AS}	N	11.9	
			P	-19.3	
Avalanche Energy	L = 0.1mH	E_{AS}	N	7.1	mJ
			P	18.7	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	N	17	W
			P	18	
	$T_C = 100\text{ }^\circ\text{C}$		N	7.1	
			P	7.3	

PE601CA

N&P-Channel Enhancement Mode MOSFET

Power Dissipation ³	$T_A = 25\text{ }^\circ\text{C}$	P_D	N	2.7	W
			P	2.7	
	$T_A = 70\text{ }^\circ\text{C}$		N	1.7	
			P	1.7	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	CH.	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient ²	$t \leq 10\text{ s}$	$R_{\theta JA}$	N		45	$^\circ\text{C} / \text{W}$
			P		45	
Junction-to-Ambient ²	Steady-State		N		71	
			P		69	
Junction-to-Case	Steady-State	$R_{\theta JC}$	N		7	
			P		6.8	

¹Pulse width limited by maximum junction temperature.

²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

³The Power dissipation is based on $R_{\theta JA} t \leq 10\text{ s}$ value.

⁴Package limitation current is N-Ch=8.3A, P-Ch=-6.9A.

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	CH.	LIMITS			UNITS
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	N	30			V
		$V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$	P	-30			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	N	1	1.6	2.5	V
		$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	P	-1	-1.5	-2.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	N			± 100	nA
		$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	P			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$	N			1	μA
		$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$	P			-1	
		$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$	N			10	
		$V_{DS} = -20\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$	P			-10	

PE601CA

N&P-Channel Enhancement Mode MOSFET

Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6A$	N	17.1	32	mΩ
		$V_{GS} = -4.5V, I_D = -5A$	P	28.2	45	
		$V_{GS} = 10V, I_D = 7A$	N	12.6	22	
		$V_{GS} = -10V, I_D = -6A$	P	20.2	28	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 7A$	N	40		S
		$V_{DS} = -10V, I_D = -6A$	P	17.5		
DYNAMIC						
Input Capacitance	C_{iss}	N-Channel $V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$ P-Channel $V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$	N	344		pF
			P	904		
Output Capacitance	C_{oss}		N	72		
			P	143		
Reverse Transfer Capacitance	C_{rss}		N	50		
			P	123		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	N	2.8		Ω
			P	11.3		
Total Gate Charge ²	Q_g	N-Channel $V_{DS} = 15V, I_D = 10A$ $I_D = 7A$ P-Channel $V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -6A$	N	7.8		nC
			P	21		
Gate-Source Charge ²	Q_{gs}		N	1		
			P	2		
Gate-Drain Charge ²	Q_{gd}		N	2		
			P	6.1		
Turn-On Delay Time ²	$t_{d(on)}$	N-Channel $V_{DS} = 15V,$ $I_D \cong 7A, V_{GS} = 10V, R_{GEN} = 6\Omega$ P-Channel $V_{DS} = -15V,$ $I_D \cong -6A, V_{GS} = -10V,$ $R_{GEN} = 6\Omega$	N	15		nS
			P	15		
Rise Time ²	t_r		N	30		
			P	30		
Turn-Off Delay Time ²	$t_{d(off)}$		N	20		
			P	50		
Fall Time ²	t_f	N	13			
		P	41			

PE601CA

N&P-Channel Enhancement Mode MOSFET

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)

Continuous Current ³	I _S		N		15	A
			P		-18	
Forward Voltage ¹	V _{SD}	I _F = 7A, V _{GS} = 0V	N		1.1	V
		I _F = -6A, V _{GS} = 0V	P		-1	
Reverse Recovery Time	t _{rr}	I _F = 7A, di _F /dt = 100A / μs I _F = -6A, di _F /dt = 100A / μS	N		8.6	nS
			P		12.2	
Reverse Recovery Charge	Q _{rr}	I _F = 7A, di _F /dt = 100A / μs I _F = -6A, di _F /dt = 100A / μS	N		2.1	nC
			P		3.7	

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

²Independent of operating temperature.

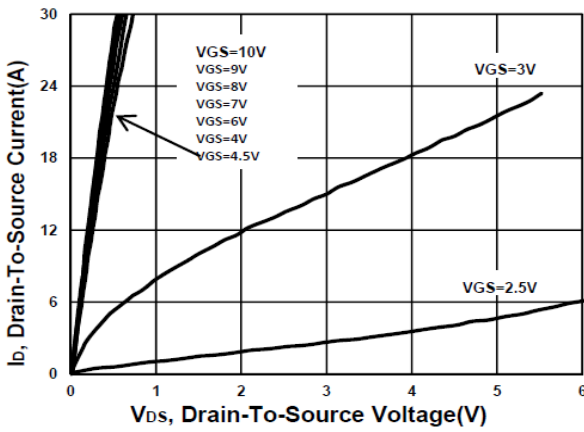
³Package limitation current is N-Ch=8.3A, P-Ch=-6.9A.

PE601CA

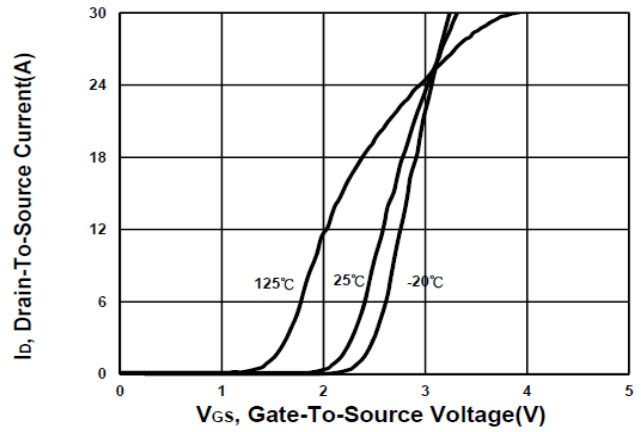
N&P-Channel Enhancement Mode MOSFET

N-CHANNEL

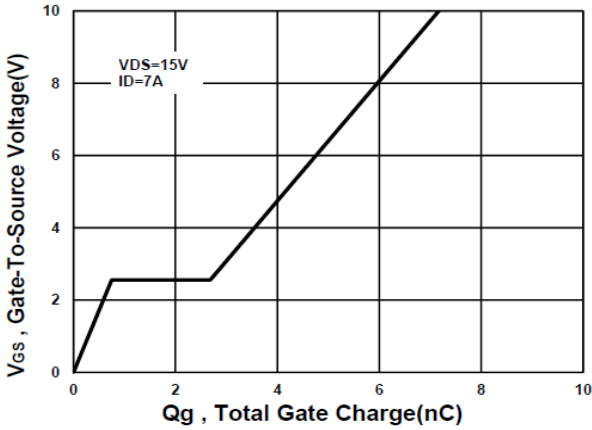
Output Characteristics



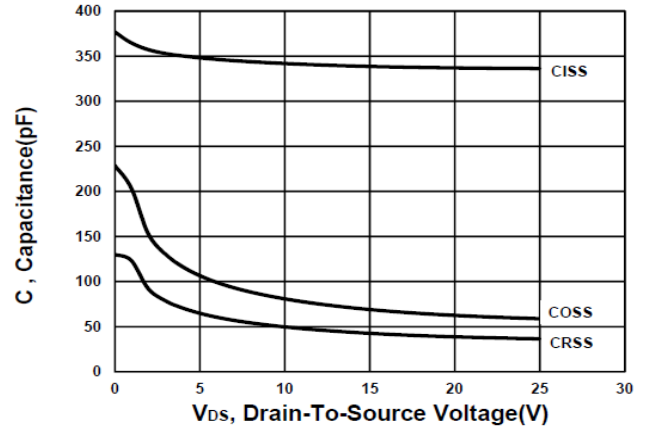
Transfer Characteristics



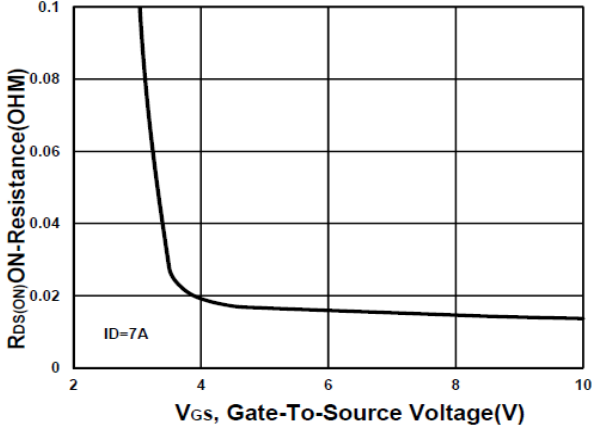
Gate charge Characteristics



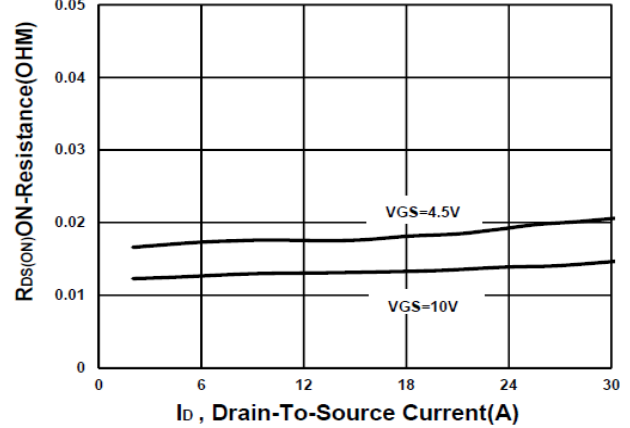
Capacitance Characteristic



On-Resistance VS Gate-To-Source



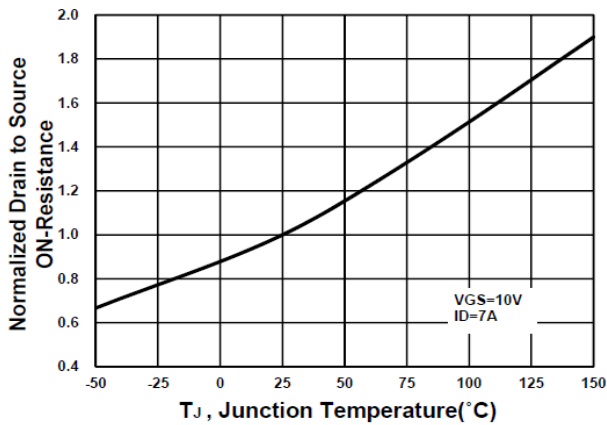
On-Resistance VS Drain Current



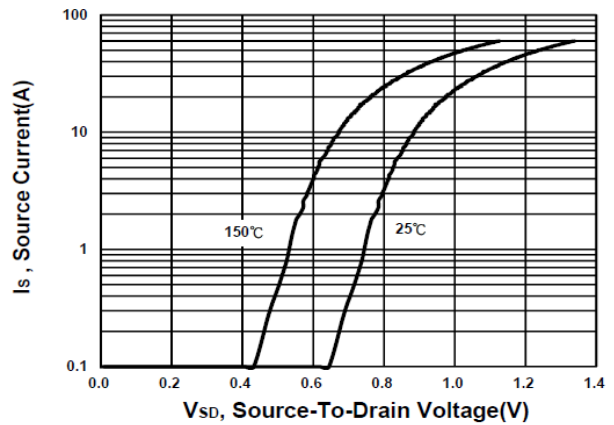
PE601CA

N&P-Channel Enhancement Mode MOSFET

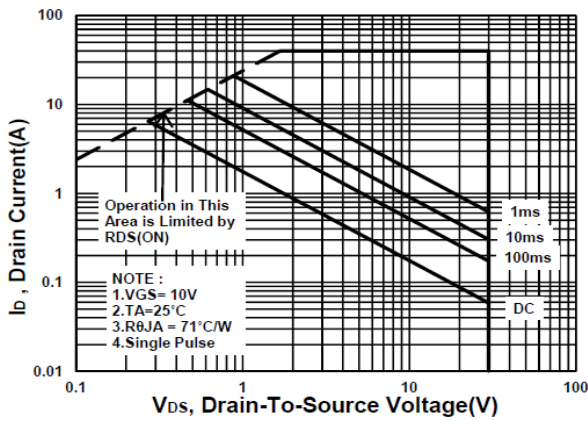
On-Resistance VS Temperature



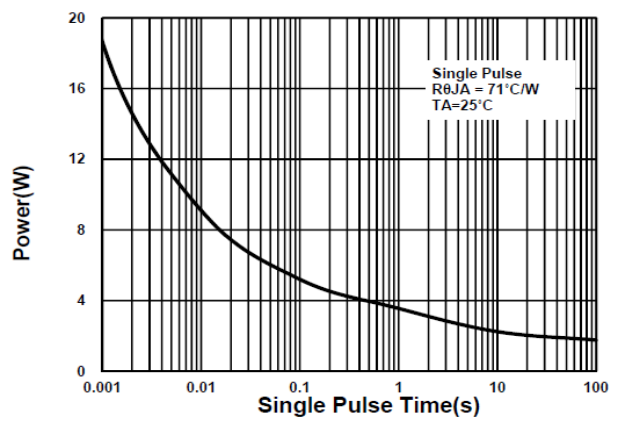
Source-Drain Diode Forward Voltage



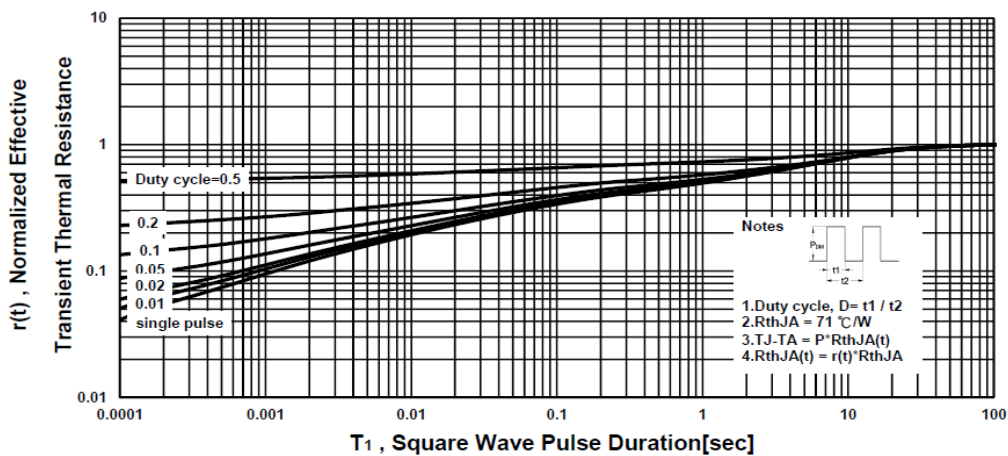
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

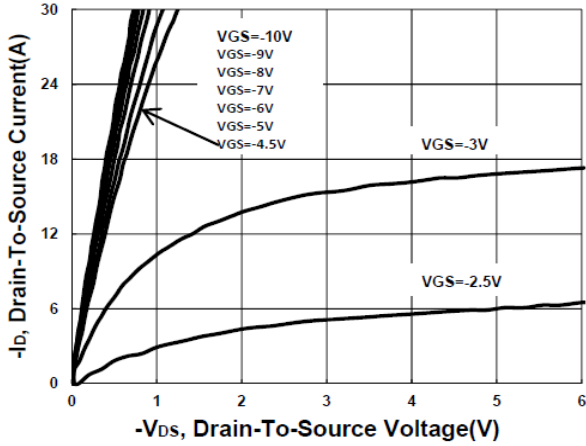


PE601CA

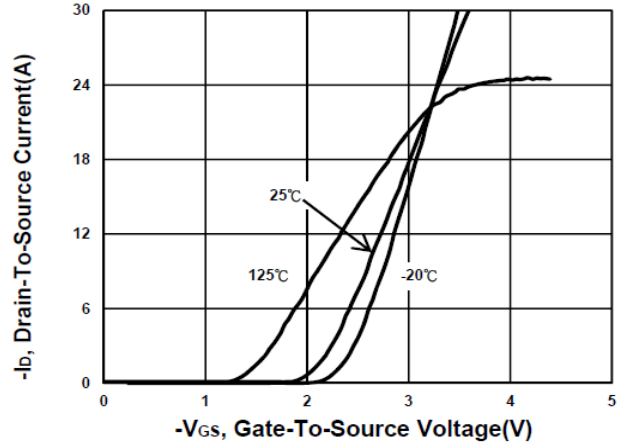
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P-CHANNEL

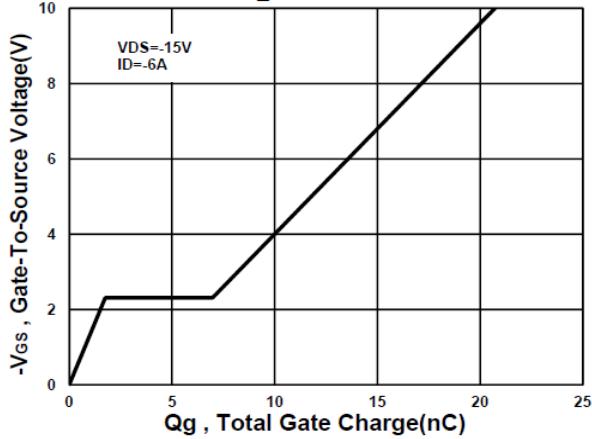
Output Characteristics



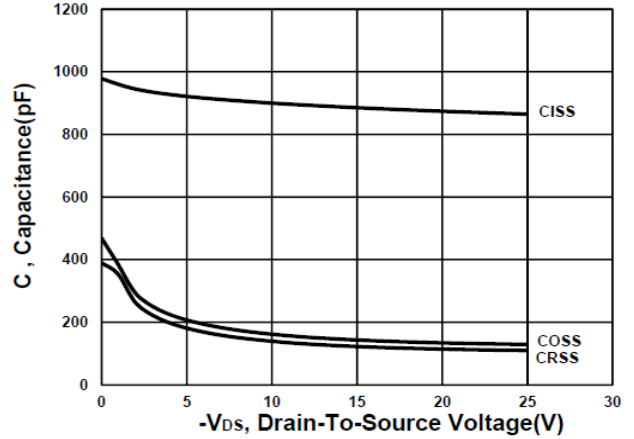
Transfer Characteristics



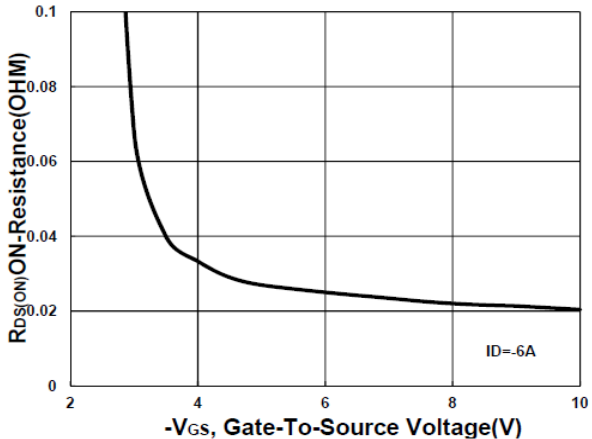
Gate charge Characteristics



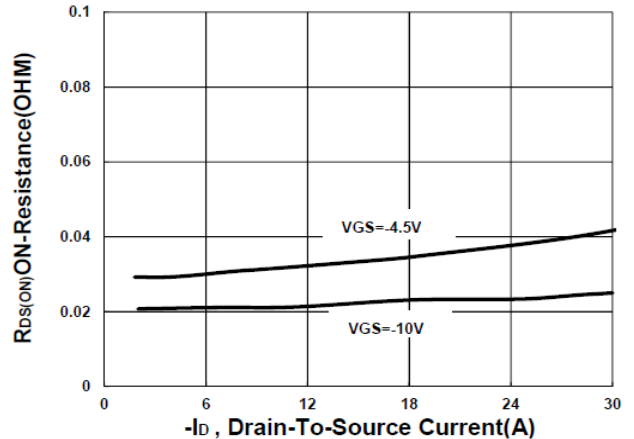
Capacitance Characteristic



On-Resistance VS Gate-To-Source



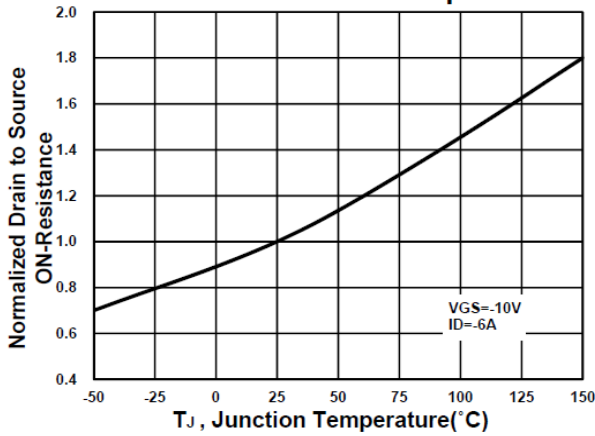
On-Resistance VS Drain Current



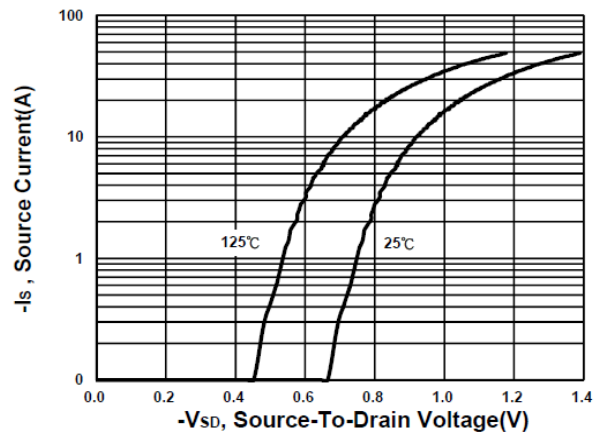
PE601CA

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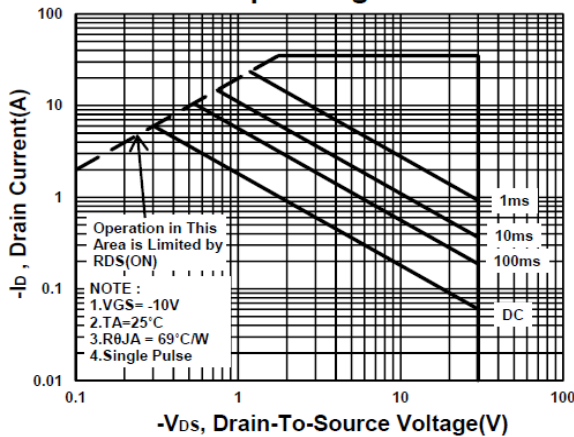
On-Resistance VS Temperature



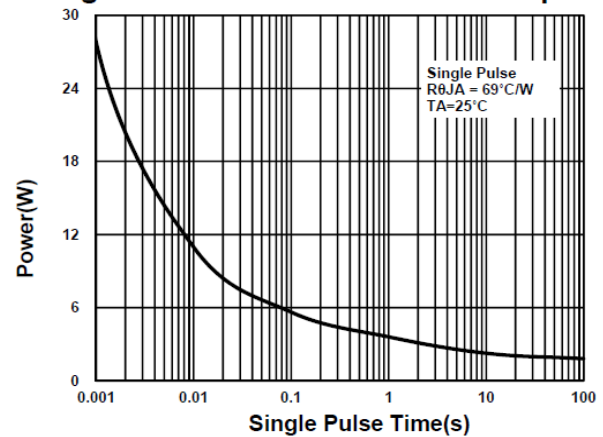
Source-Drain Diode Forward Voltage



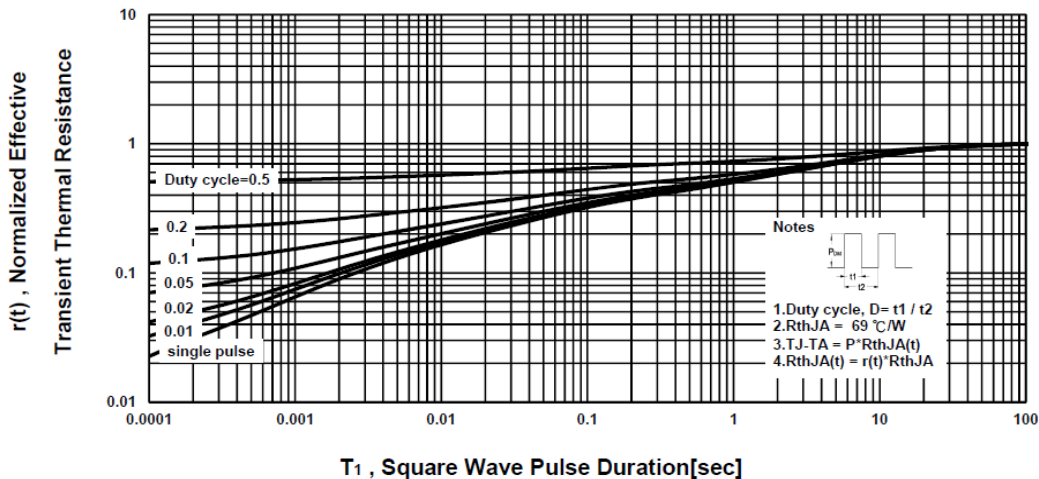
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



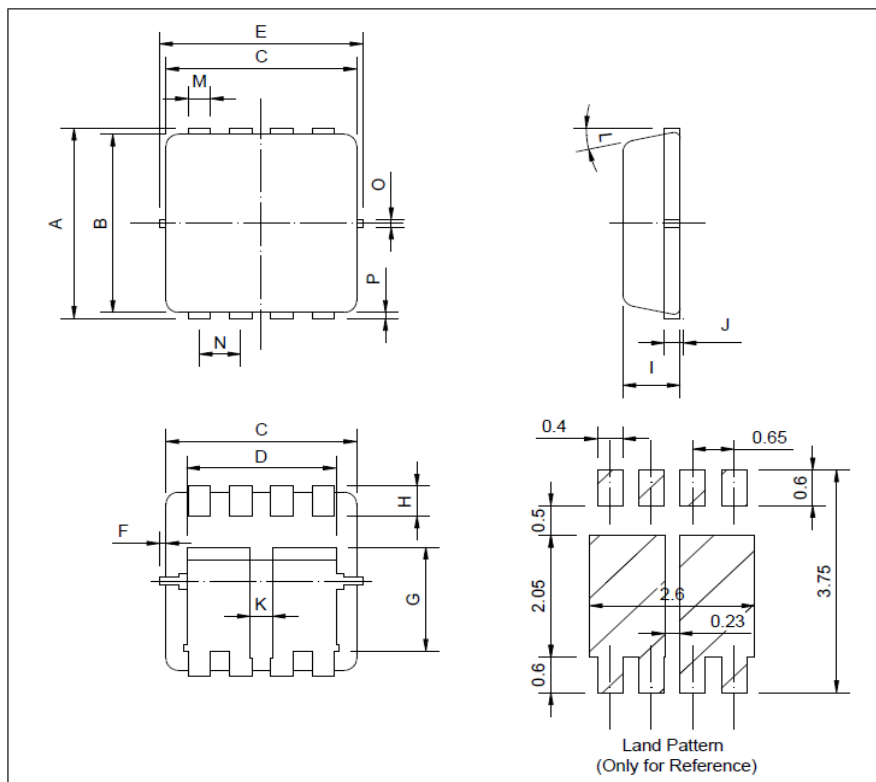
PE601CA

N&P-Channel Enhancement Mode MOSFET

Package Dimension

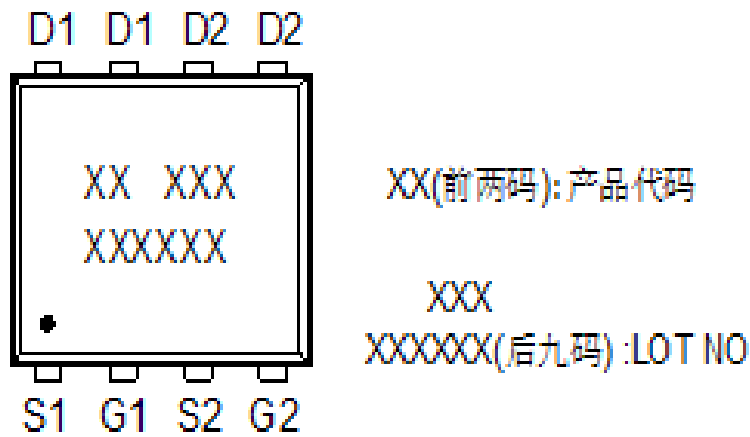
PDFN 3x3P(Dual) MECHANICAL DATA

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

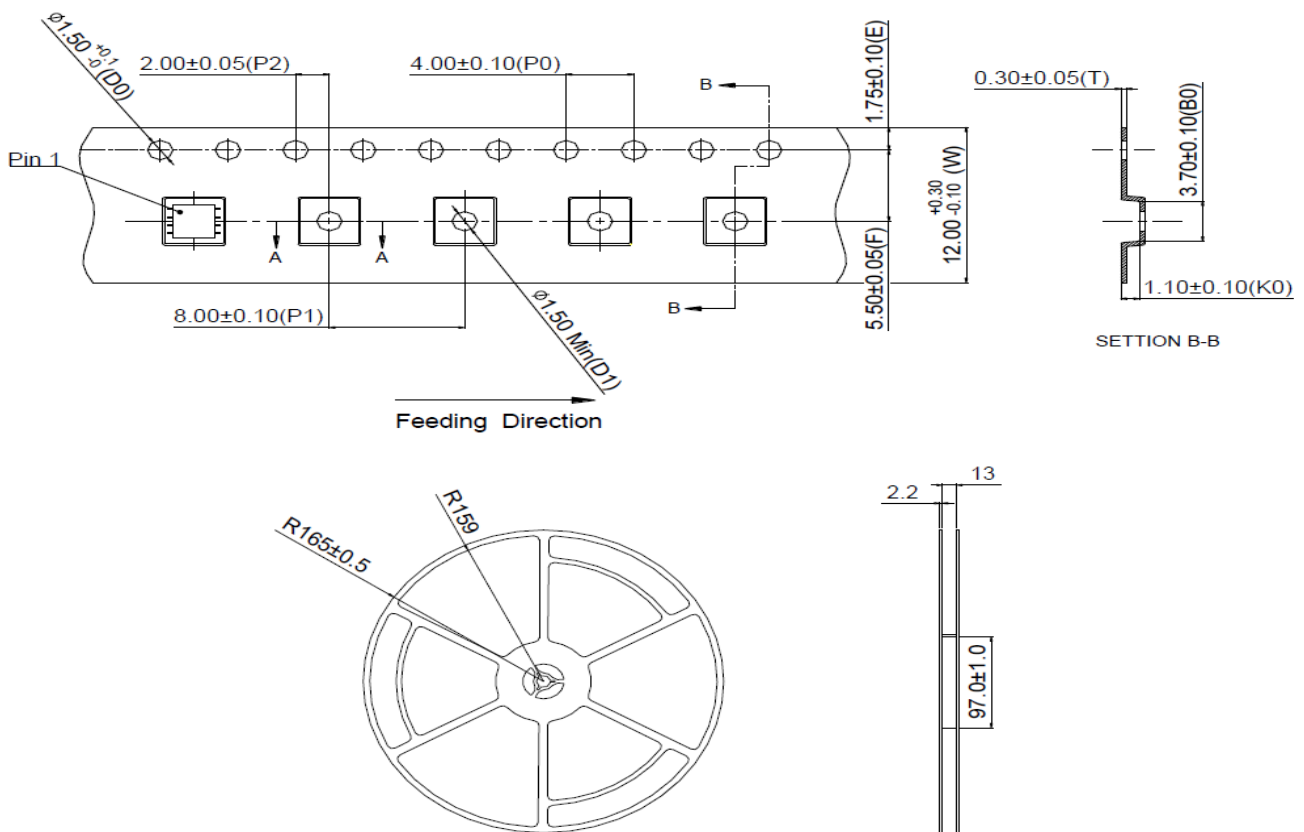


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A. Marking Information(此产品代码为: K9)



B. Tape & Reel Information: 5000pcs/Reel

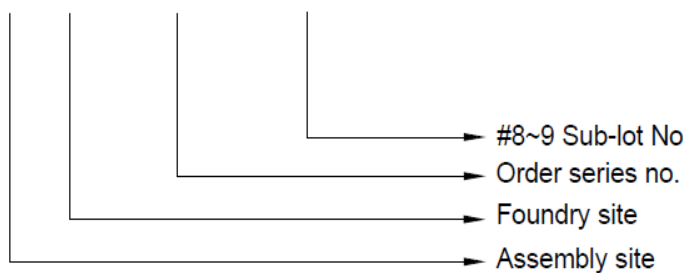


PE601CA
N&P-Channel Enhancement Mode MOSFET

C. Lot.No. & Date Code rule

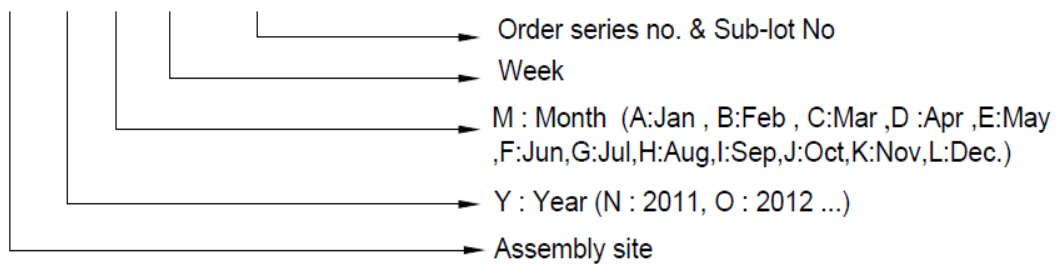
1.LOT.NO.

M N 15M21 03



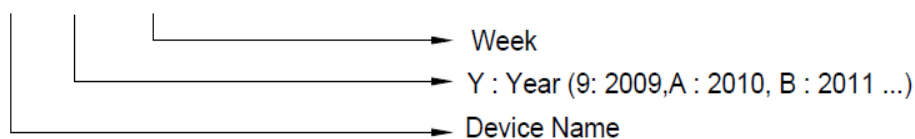
2.Date Code

D Y M X XXX



3.Date Code (for Small package)

XX Y WW





PE601CA

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D.Label rule

标签内容(Label content)



1	Label Size	30 * 90 mm
2	Font style	Times New Roman or Arial (或可区分英文”0”和数字”0”，”G和”Q”的字型即可)
3	Great Power	Height: 4 mm
4	Package	Height: 2 mm
5	Date	Height: 2 mm Shipping date: YYYY/MM/DD, ex. 2008/09/12
6	Device	Height: 3 mm (Max: 16 Digit)
7	Lot	Height: 3 mm (Max: 9 Digit) Sub lot
8	D/C	Height: 3 mm (Max: 7 Digit)
9	QTY	Height: 3 mm (Max: 6 Digit) Thousand mark is no needed
10	Pb Free label	 Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
11	Halogen Free label	 Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
12	Scan info	Device / Lot / D/C / QTY , Insert “ / “ between every parts. for example: P3055LDG/G12345601/GGG2301/2000 DPI (Dots per inch): Over 300 dpi Code : Code 128 Height: 6 mm at least