UNIKC Semiconductor

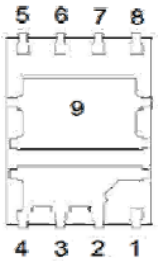
RoHS Compliant

PK650DY

Dual N-Channel Enhancement Mode MOSFET

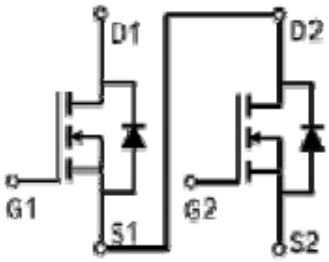
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	CH.
30V	2.8mΩ @V_{GS} = 10V	83A	Q2
30V	11mΩ @V_{GS} = 10V	36A	Q1



1 : G1
2,3,4 : D1
5,6,7 : S2
8 : G2
9 : S1/D2

PDFN 5*6P



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

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	Q2	30	V
			Q1	30	
Gate-Source Voltage		V_{GS}	Q2	±20	
			Q1	±20	
Continuous Drain Current[3]	T_C = 25 °C	I_D	Q2	83	A
			Q1	36	
	T_C = 100 °C		Q2	52	
			Q1	23	
Pulsed Drain Current[1]		I_{DM}	Q2	130	
			Q1	55	
Continuous Drain Current	T_A = 25 °C	I_D	Q2	21	
			Q1	10	
	T_A = 70 °C		Q2	17	
			Q1	8	
Avalanche Current		I_{AS}	Q2	52	
			Q1	21	
Avalanche Energy	L = 0.1mH	E_{AS}	Q2	135	mJ
			Q1	22	
Power Dissipation	T_C = 25 °C	P_D	Q2	36	W
			Q1	28	
	T_C = 100 °C		Q2	14	
			Q1	11	

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Power Dissipation	T_A = 25 °C	P_D	Q2	2.4	W
			Q1	2	
	T_A = 70 °C		Q2	1.5	
			Q1	1.3	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	CH.	TYPICA	MAXIMUM	UNITS
Junction-to-Ambient[2]	$R_{\theta JA}$	Q2		51	°C / W
		Q1		60	
Junction-to-Case	$R_{\theta JC}$	Q2		3.4	
		Q1		4.4	

[1]Pulse width limited by maximum junction temperature $T_{J(MAX)}$=150°C.

[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 T_A =25°C.The value in any given application depends on the user's specific board design.

[3]Package limitation current :Q1=29A,Q2=42A.

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

PARAMETER	SYMBOL	TEST CONDITIONS	CH.	LIMITS			UNITS
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	Q2	30			V
			Q1	30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	Q2	1.3	1.75	2.3	
			Q1	1.3	1.75	2.3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	Q2			±100	nA
			Q1			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	Q2			1	μA
			Q1			1	
		V_{DS} = 20V, V_{GS} = 0V , T_J = 55 °C	Q2			10	
			Q1			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 16A	Q2		2.1	3.8	mΩ
		V_{GS} = 4.5V, I_D = 10A	Q1		10	14	
		V_{GS} = 10V, I_D = 20A	Q2		1.6	2.8	
		V_{GS} = 10V, I_D = 10A	Q1		6.8	11	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A	Q2		55		S
		V_{DS} = 5V, I_D = 10A	Q1		40		

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DYNAMIC							
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	Q2		3685		pF
			Q1		531		
Output Capacitance	C_{oss}		Q2		615		
			Q1		147		
Reverse Transfer Capacitance	C_{rss}		Q2		388		
			Q1		67		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	Q2		1		Ω
			Q1		1		
Total Gate Charge[2]	Q_g V_{GS}=10V	Q2 V_{DS} = 15V , I_D = 20A Q1 V_{DS} = 15V , I_D = 10A	Q2		72		nC
			Q1		10		
	Q_g V_{GS}=4.5V		Q2		37		
			Q1		5.6		
Gate-Source Charge[2]	Q_{gs}		Q2		10		
			Q1		1.4		
Gate-Drain Charge[2]	Q_{gd}		Q2		18		
			Q1		3		
Turn-On Delay Time[2]	$t_{d(on)}$	Q2 V_{DS} = 15V, I_D ≅ 20A, V_{GS}=10V, R_{GEN}= 6Ω Q1 V_{DS} = 15V , I_D ≅ 10A, V_{GS} = 10V, R_{GEN} =6Ω	Q2		32		nS
			Q1		15		
Rise Time[2]	t_r		Q2		16		
			Q1		13		
Turn-Off Delay Time[2]	$t_{d(off)}$		Q2		72		
			Q1		21		
Fall Time[2]	t_f		Q2		10		
			Q1		15		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current[3]	I_S		Q2			36	A
			Q1			23	
Forward Voltage[1]	V_{SD}	I_F = 20A, V_{GS} = 0V	Q2			1	V
		I_F = 10A, V_{GS} = 0V	Q1			1.2	
Reverse Recovery Time	t_{rr}	Q2 I_F = 20A, dI_F/dt = 100A /μs Q1 I_F = 10A, dI_F/dt = 100A /μS	Q2		28		nS
			Q1		8.8		
Reverse Recovery Charge	Q_{rr}		Q2		13		nC
			Q1		1.2		

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

[2]Independent of operating temperature.

[3]Package limitation current :Q1=29A,Q2=42A.

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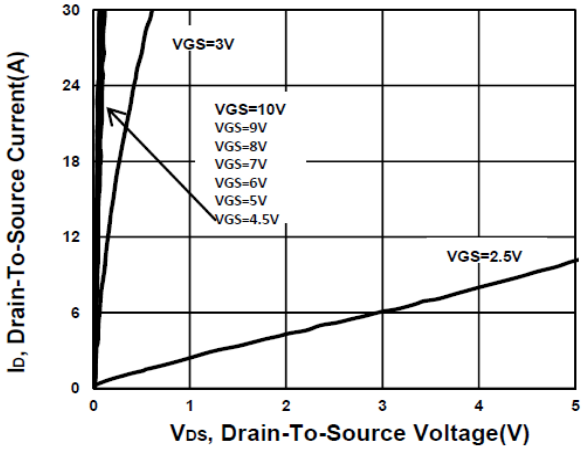
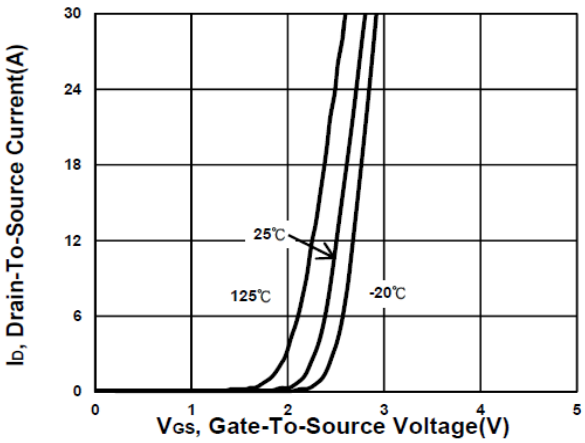
Q2

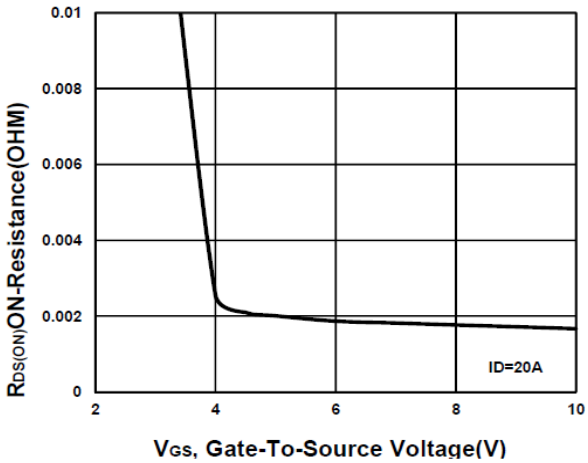
Output Characteristics



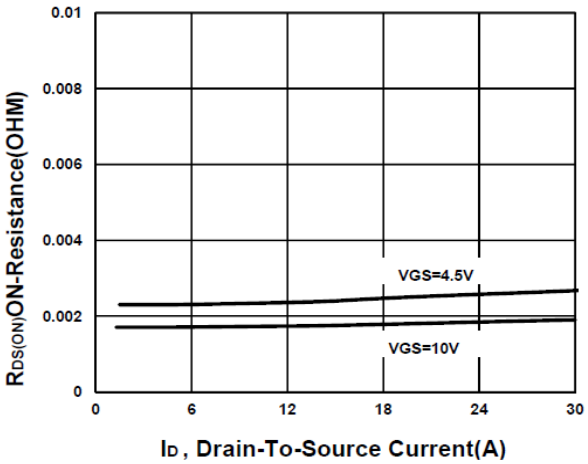
Transfer Characteristics



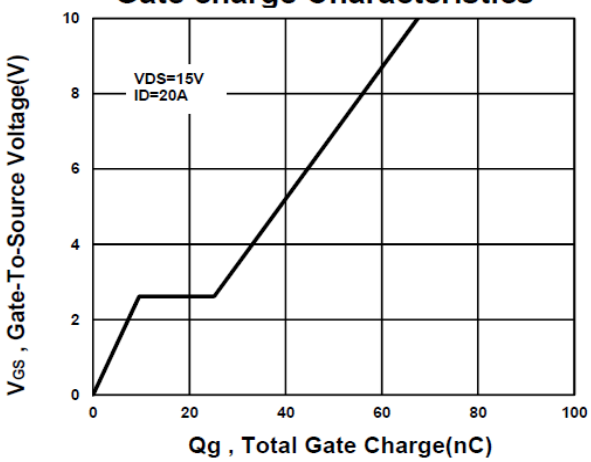
On-Resistance VS Gate-To-Source



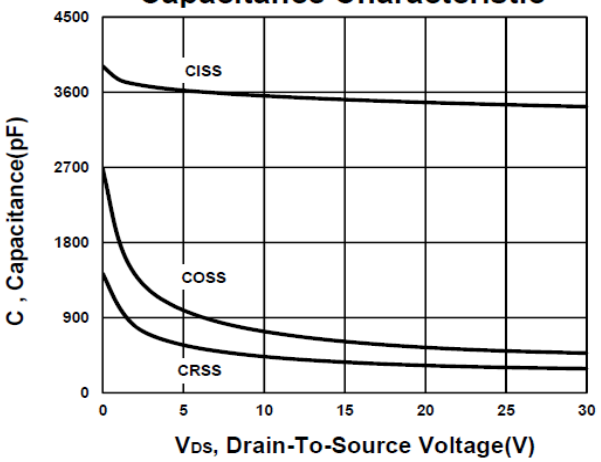
On-Resistance VS Drain Current



Gate charge Characteristics



Capacitance Characteristic



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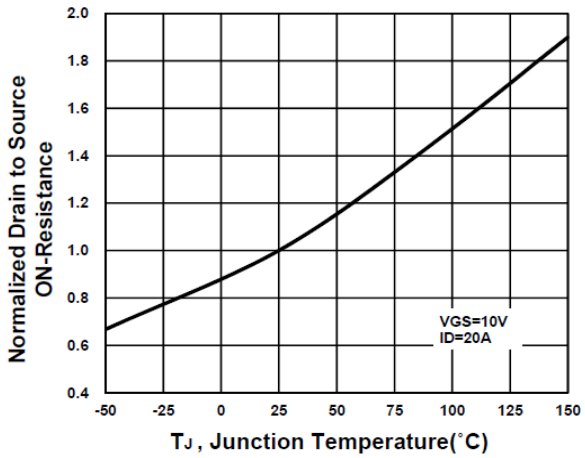
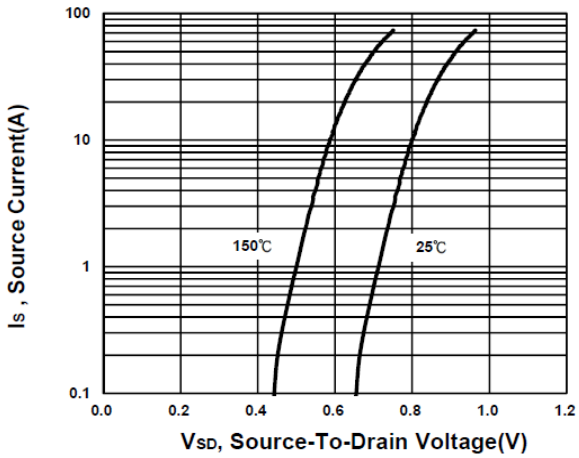
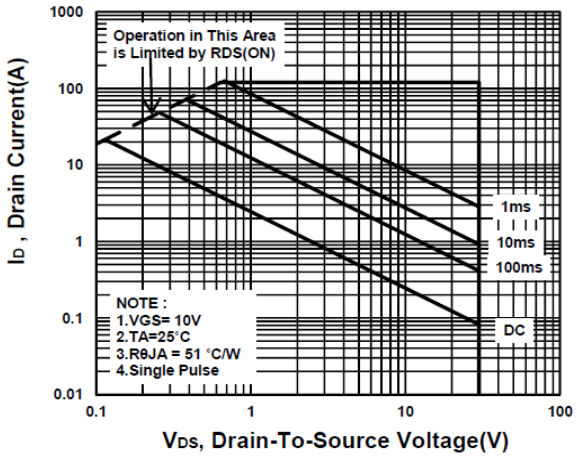
On-Resistance VS Temperature



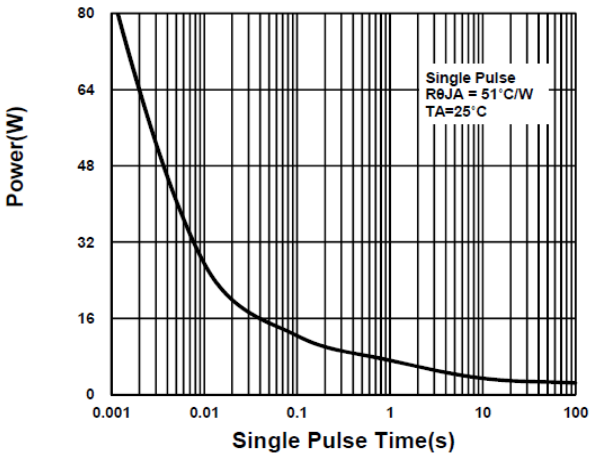
Source-Drain Diode Forward Voltage



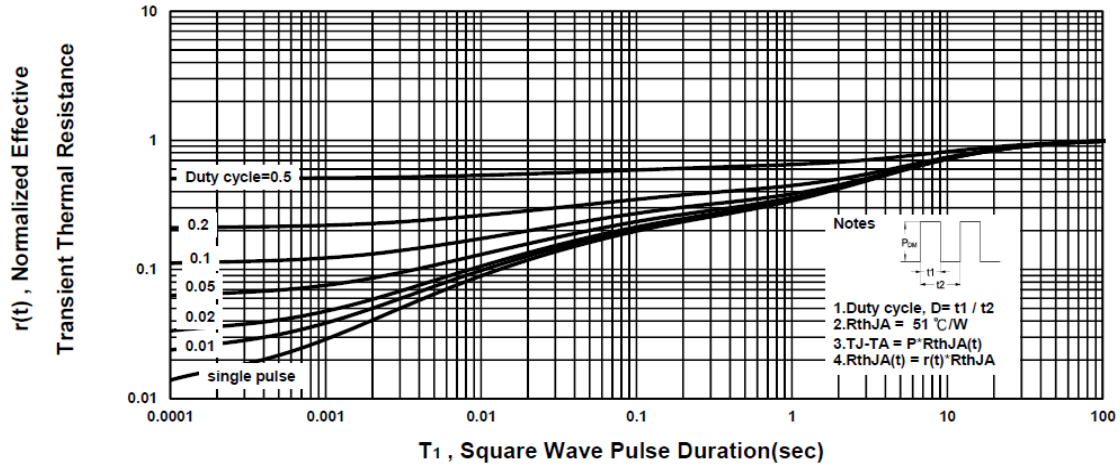
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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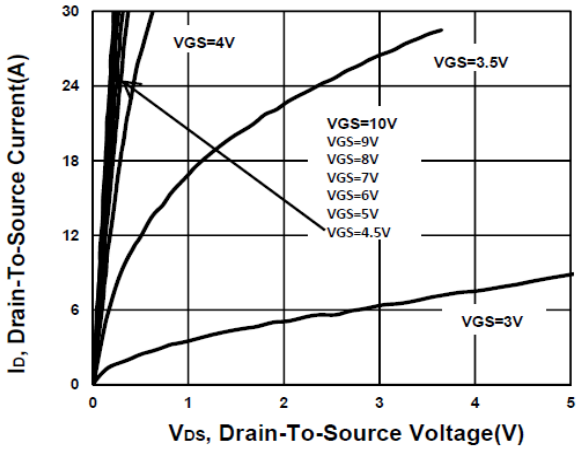
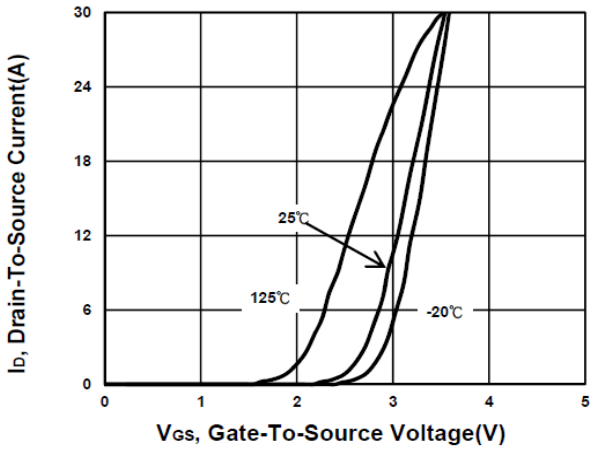
Q1

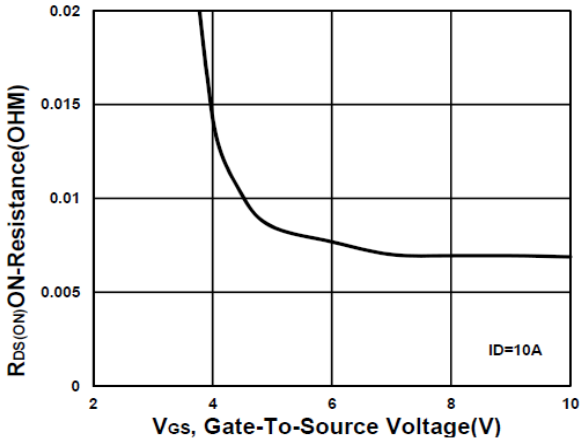
Output Characteristics



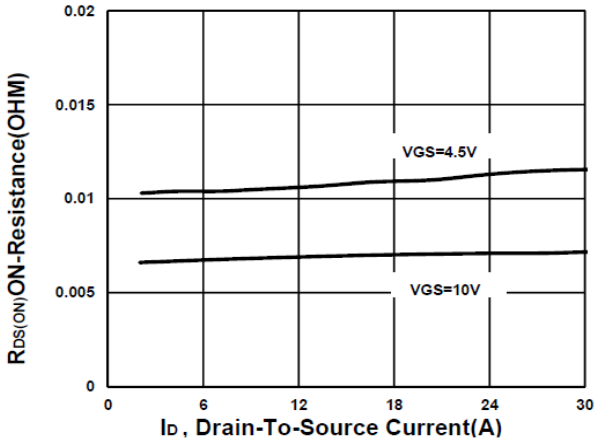
Transfer Characteristics



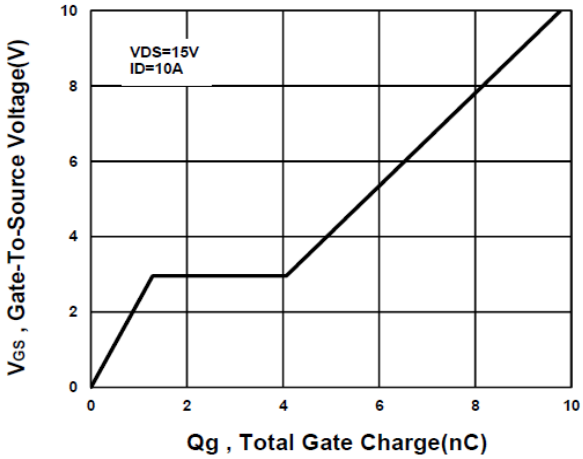
On-Resistance VS Gate-To-Source



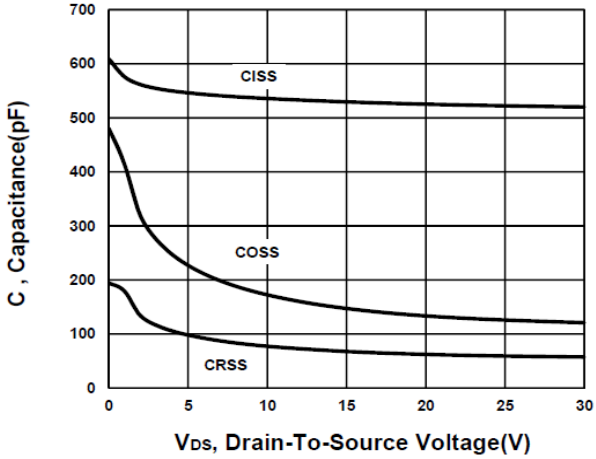
On-Resistance VS Drain Current



Gate charge Characteristics



Capacitance Characteristic



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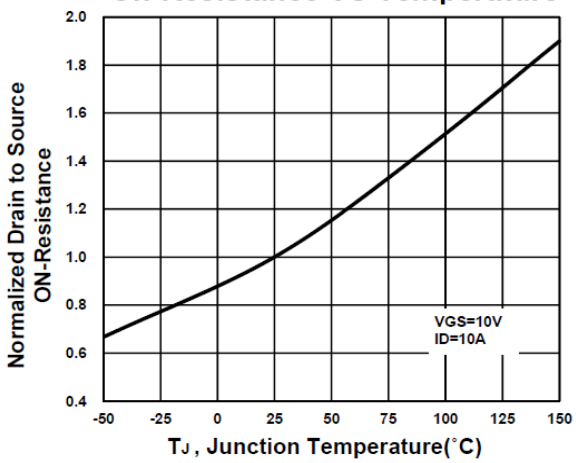
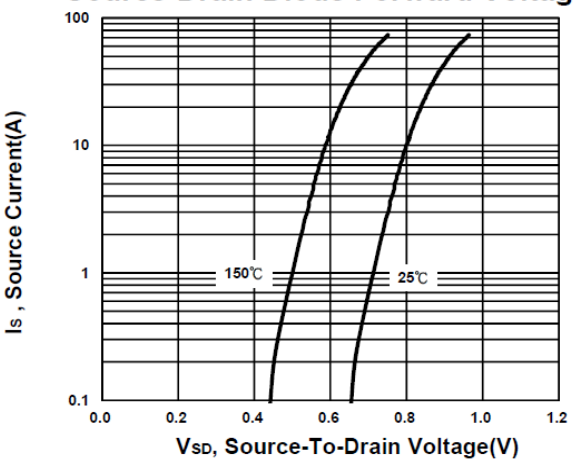
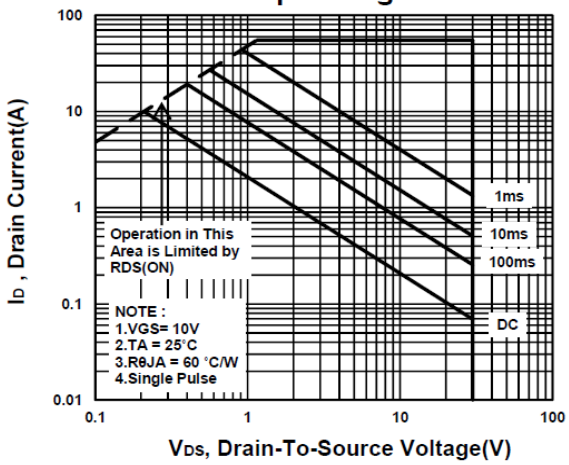
On-Resistance VS Temperature



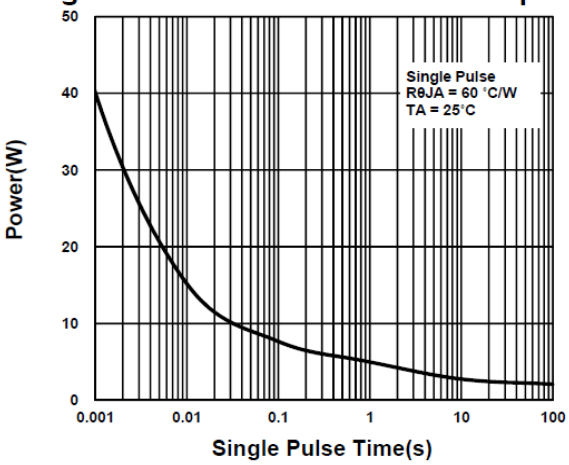
Source-Drain Diode Forward Voltage



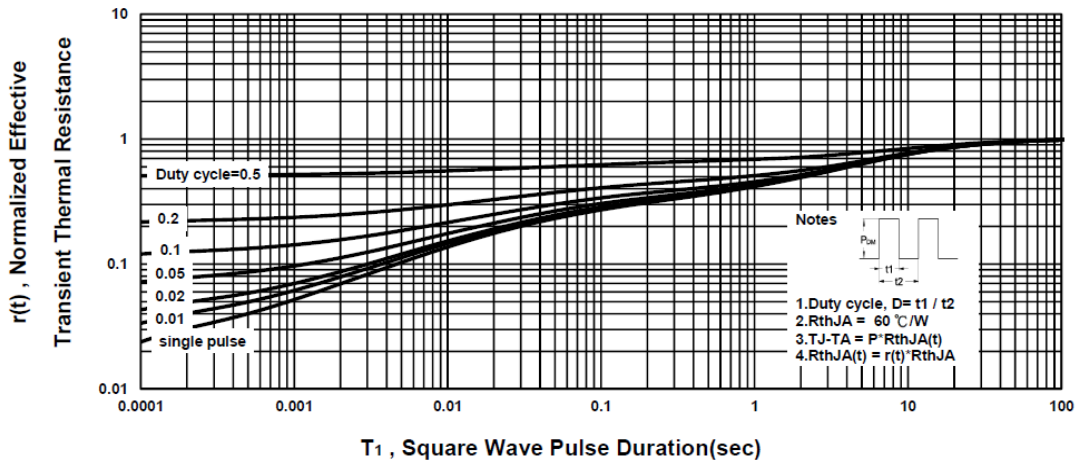
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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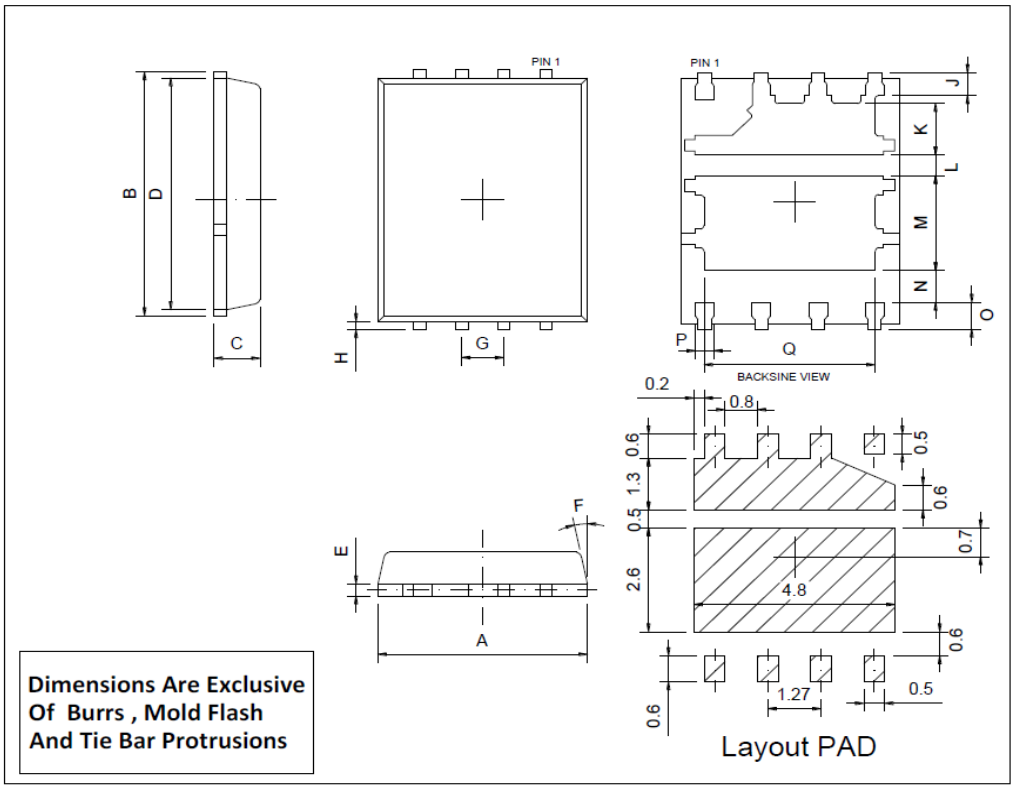
Package Dimension

PDFN 5x6P(上下 Dual) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	5	5.4	K	0.82	1.06	1.3
B	5.9	6.15	6.35	L	0.4	0.5	0.6
C	0.9	1	1.18	M	2.0	2.21	2.42
D	5.42	5.59	5.85	N	0.5	1	
E	0.15	0.25	0.35	O	0.42	0.56	0.71
F	0°	6°	12°	P	0.3	0.4	0.51
G	1.17	1.27	1.37	Q	3.61	4.05	4.5
H	0.06	0.21	0.36				
J	0.41	0.55	0.7				



＊散热片形状会因为封装厂框架不同而有所差异。

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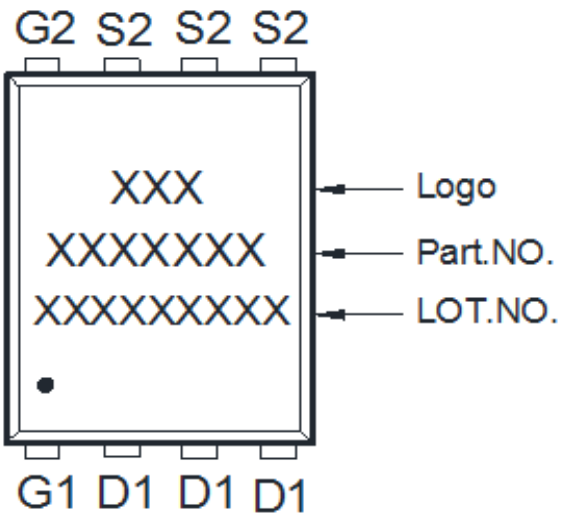
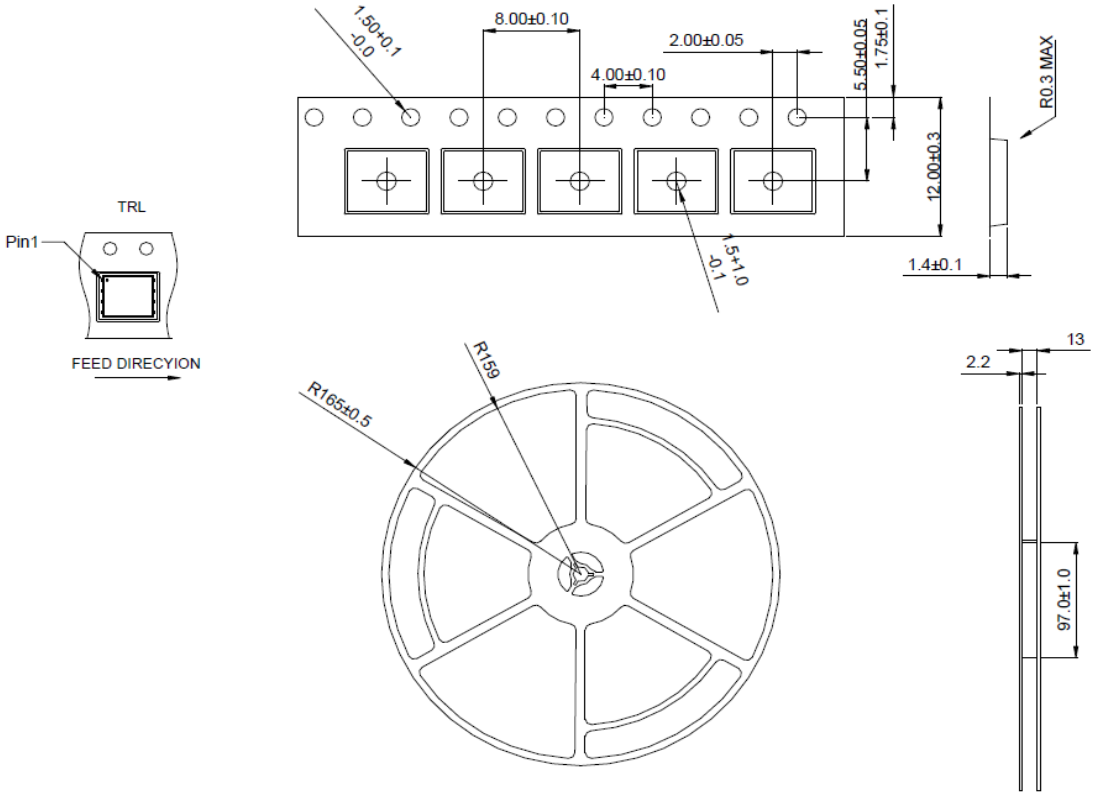
A. Marking Information



B. Tape&Reel Information:3000pcs/Reel



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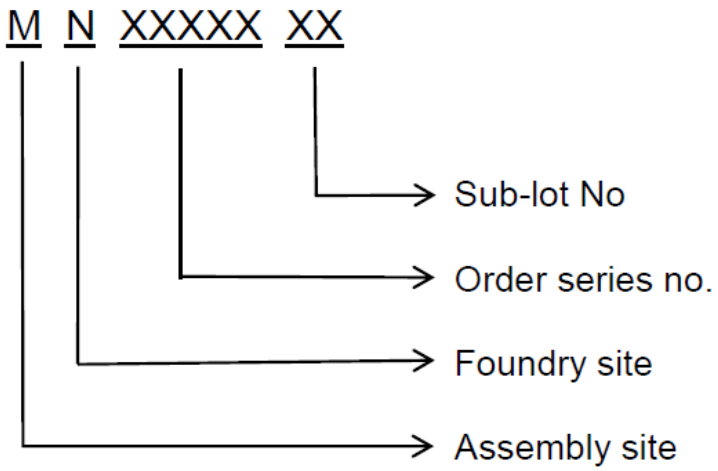
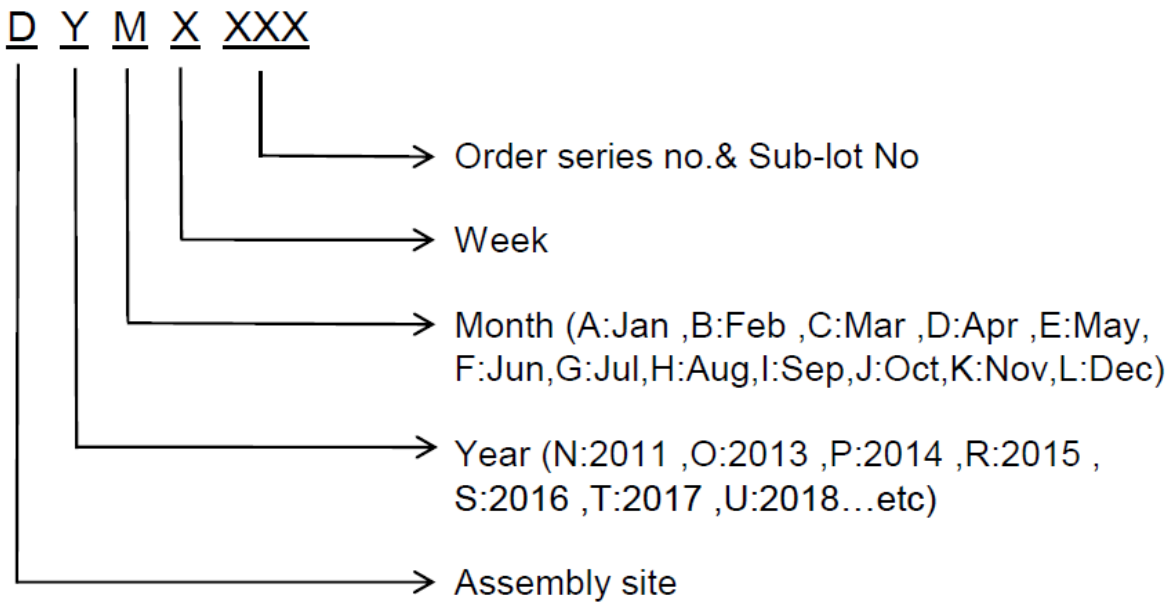
C. Lot No.&Date Code rule

1.Lot No.



2.Date Code



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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”O”和数字”0”，”G和”Q”的字型即可）
3	U-NIKC	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	RoHS label	RoHS long axis: 12 mm minor axis:6 mm bottom color: White Font color: Black Font style: Arial
11	Halogen Free label	G Diameter: 10 mm bottom color: Green Font color: Black Font style: Arial
12	Scan information	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