UNIKC Semiconductor

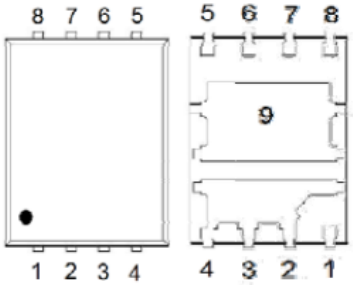
RoHS Compliant

PK608DY

N-Channel Enhancement Mode MOSFET

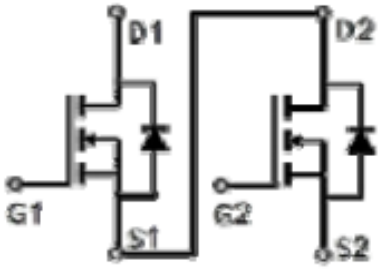
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
30V	7mΩ @V_{GS} =10V	50A	Q1
30V	5.5mΩ @V_{GS} =10V	58A	Q2



PDFN 5X6P

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



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

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	Q1	30	V
			Q2	30	
Gate-Source Voltage		V_{GS}	Q1	±20	
			Q2	±20	
Continuous Drain Current[3]	T_C = 25 °C	I_D	Q1	50	A
			Q2	58	
	T_C = 100°C		Q1	31	
			Q2	36	
Pulsed Drain Current[1]		I_{DM}	Q1	81	
			Q2	104	
Continuous Drain Current	T_A = 25 °C	I_D	Q1	12	
			Q2	15	
	T_A = 70 °C		Q1	10	
			Q2	12	
Avalanche Current		I_{AS}	Q1	22	
			Q2	30	
Avalanche Energy	L = 0.1mH	E_{AS}	Q1	24	mJ
			Q2	45	
Power Dissipation	T_C = 25 °C	P_D	Q1	28	W
			Q2	35	
	T_C = 100 °C		Q1	11	
			Q2	14	

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Power Dissipation	T_A = 25 °C	P_D	Q1	2.1	W
			Q2	2.4	
	T_A = 70 °C		Q1	1.3	
			Q2	1.5	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL		TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	$R_{\theta JA}$	Q1		59	°C / W
	$R_{\theta JA}$	Q2		52	
Junction-to-Case	$R_{\theta JC}$	Q1		4.4	
	$R_{\theta JC}$	Q2		3.5	

[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=25A,Q2=34A.

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	Q1	30			V
			Q2	30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	Q1	1.3	1.6	2.3	
			Q2	1.3	1.7	2.3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	Q1			±100	nA
			Q2			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	Q1			1	μA
			Q2			1	
		V_{DS} =20V, V_{GS} = 0V, T_J = 55 °C	Q1			10	
			Q2			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 12A	Q1		6.3	9.5	mΩ
		V_{GS} =4.5V, I_D = 15A	Q2		4.3	8	
		V_{GS} = 10V, I_D = 12A	Q1		4.8	7	
		V_{GS} = 10V, I_D = 15A	Q2		3.3	5.5	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 12A	Q1		67		S
		V_{DS} = 5V, I_D = 15A	Q2		80		

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DYNAMIC							
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	Q1		852		pF
			Q2		1395		
Output Capacitance	C_{oss}		Q1		162		
			Q2		275		
Reverse Transfer Capacitance	C_{rss}		Q1		103		
			Q2		167		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	Q1		2.1		Ω
			Q2		1.3		
Total Gate Charge[2]	$Q_g(V_{GS}$ = 10V)	Q1 V_{DS} = 15V, V_{GS} = 10V, I_D = 12V, Q2 V_{DS} = 15V , V_{GS} = 10V, I_D = 15A	Q1		18.6		nC
			Q2		29.6		
	$Q_g(V_{GS}$ = 4.5V)		Q1		10		
			Q2		15.7		
Gate-Source Charge[2]	Q_{gs}		Q1		2		
			Q2		4.1		
Gate-Drain Charge[2]	Q_{gd}		Q1		5.4		
			Q2		8.5		
Turn-On Delay Time[2]	$t_{d(on)}$	Q1 V_{DS} = 15V,$I_D \cong$ 12A, V_{GS} = 10V,R_{GEN} = 6Ω Q2 V_{DS} = 15V ,$I_D \cong$ 15A, V_{GS} = 10V, R_{GEN} =6Ω	Q1		18		nS
			Q2		27		
Rise Time[2]	t_r		Q1		13		
			Q2		16		
Turn-Off Delay Time[2]	$t_{d(off)}$		Q1		33		
			Q2		66		
Fall Time[2]	t_f		Q1		15		
			Q2		23		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current[3]	I_S		Q1			23	A
			Q2			29	
Forward Voltage[1]	V_{SD}	I_F = 12A, V_{GS} = 0V	Q1			1.2	V
		I_F = 15A, V_{GS} = 0V	Q2			1.2	
Reverse Recovery Time	t_{rr}	Q1 I_F = 12A, dI_F/dt = 100A / μS Q2 I_F = 15A, dI_F/dt = 100A /μS	Q1		15.8		nS
			Q2		21.3		
Reverse Recovery Charge	Q_{rr}		Q1		5.1		nC
			Q2		8.8		

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

[2]Independent of operating temperature.

[3]Package limitation current :Q1=25A,Q2=34A.

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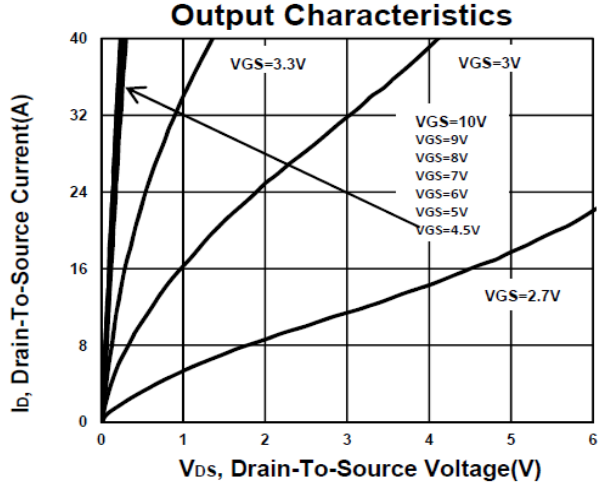
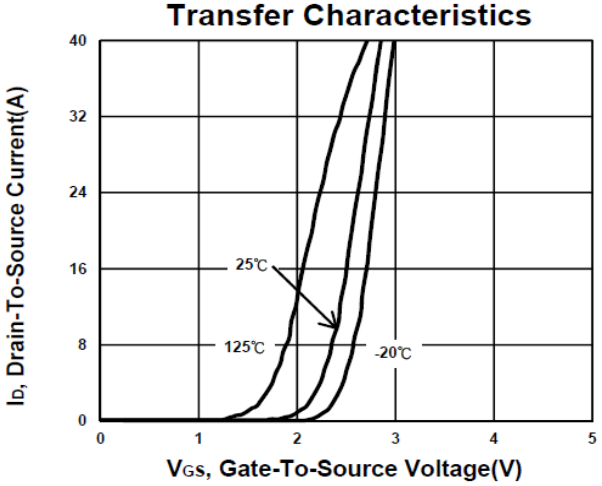
Q1

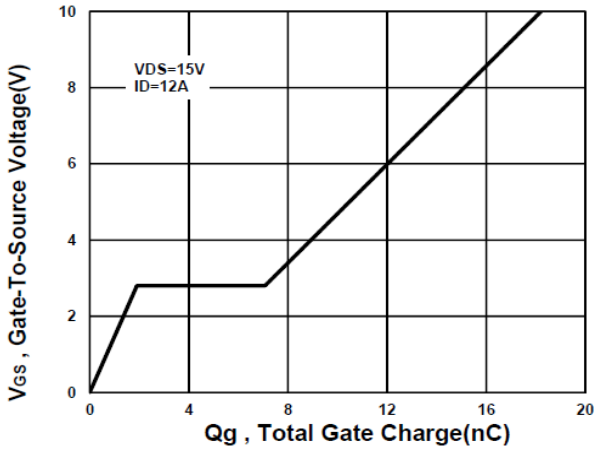
Output Characteristics



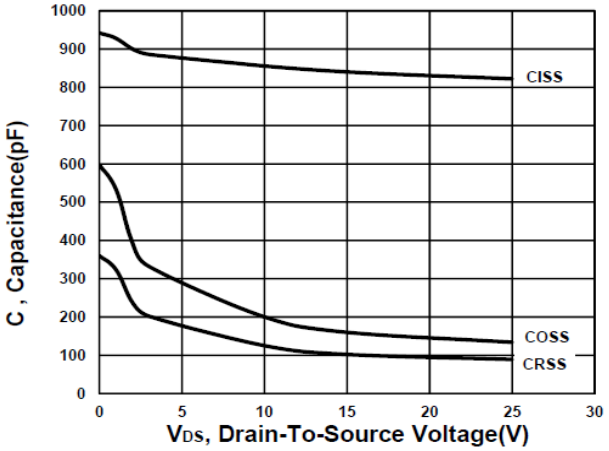
Transfer Characteristics



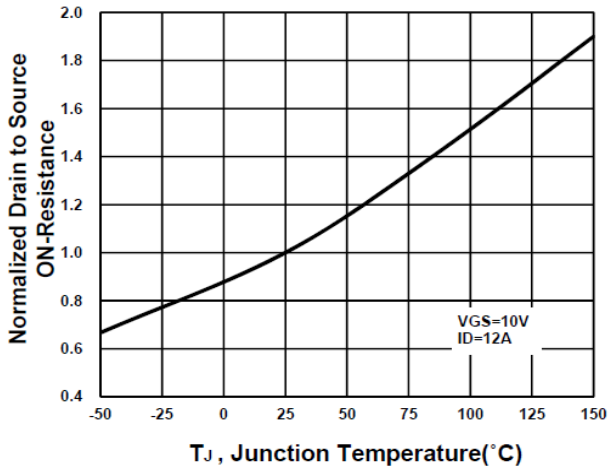
Gate charge Characteristics



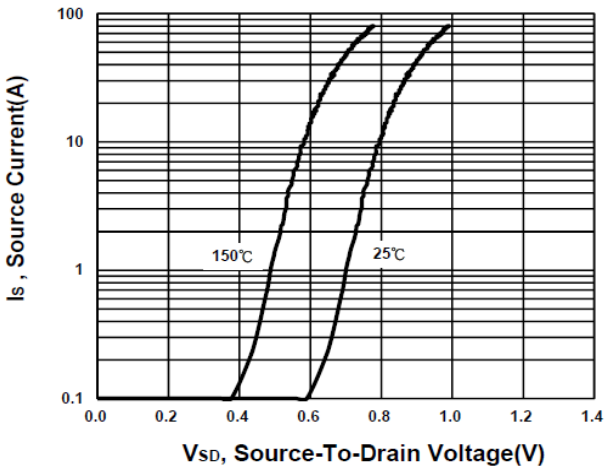
Capacitance Characteristic



On-Resistance VS Temperature



Source-Drain Diode Forward Voltage



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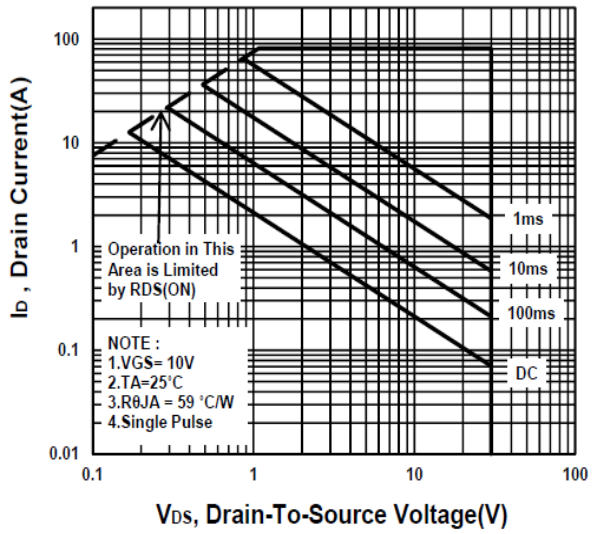
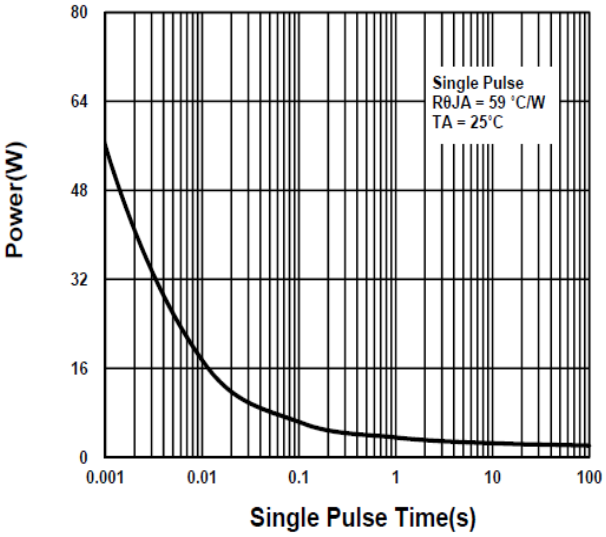
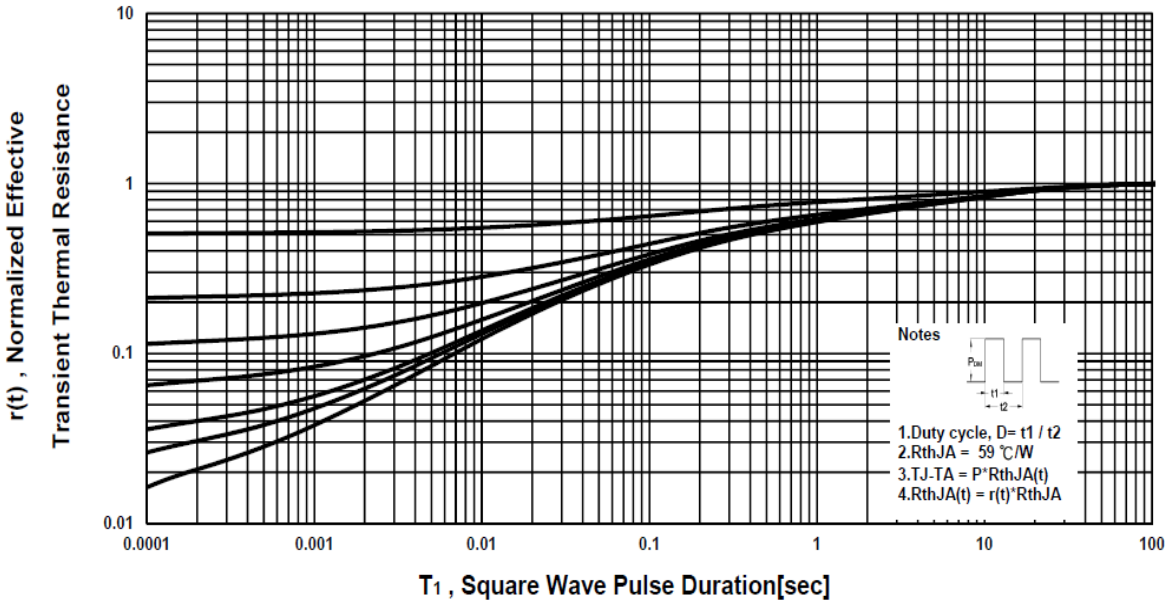
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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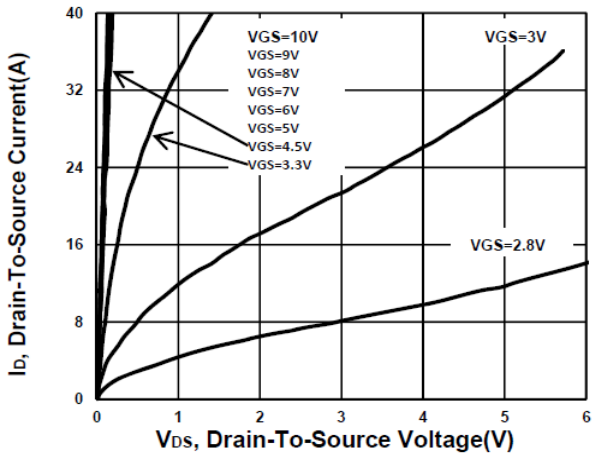
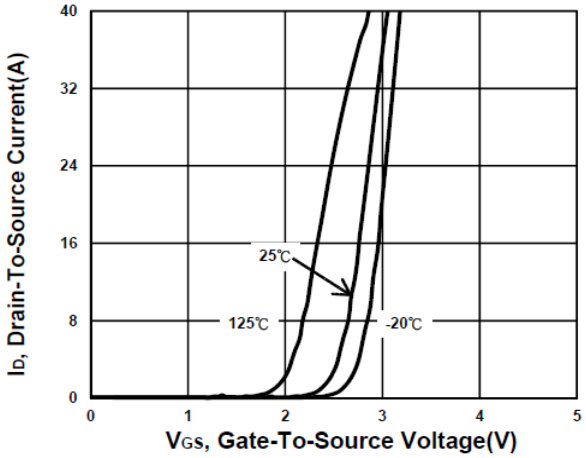
Q2

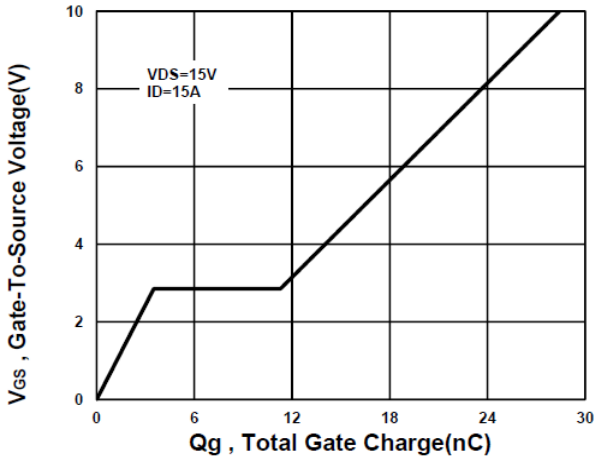
Output Characteristics



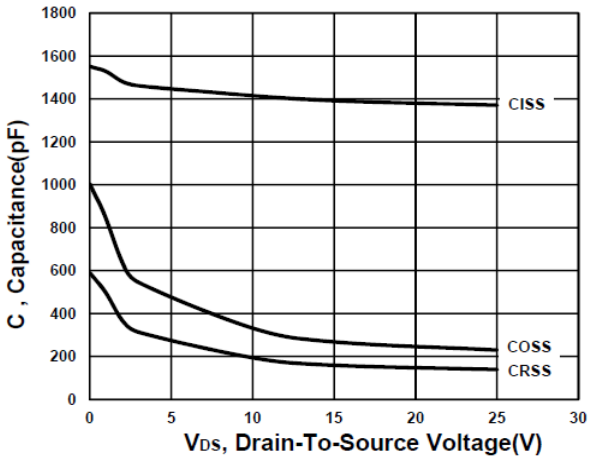
Transfer Characteristics



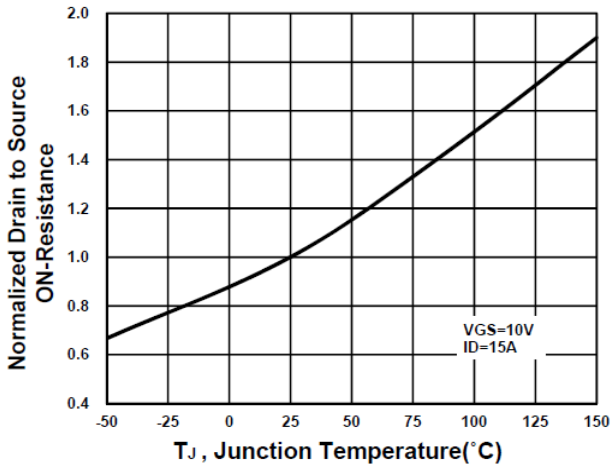
Gate charge Characteristics



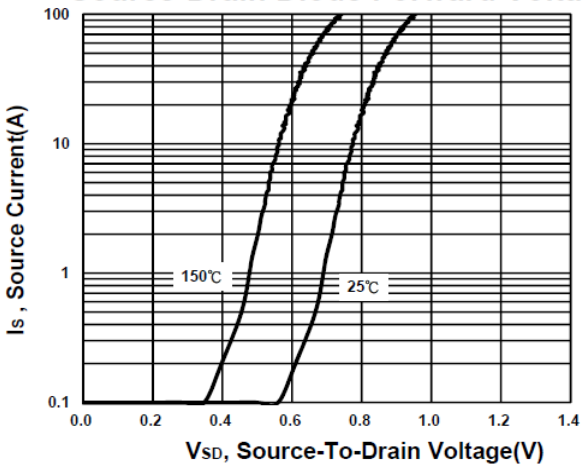
Capacitance Characteristic



On-Resistance VS Temperature



Source-Drain Diode Forward Voltage



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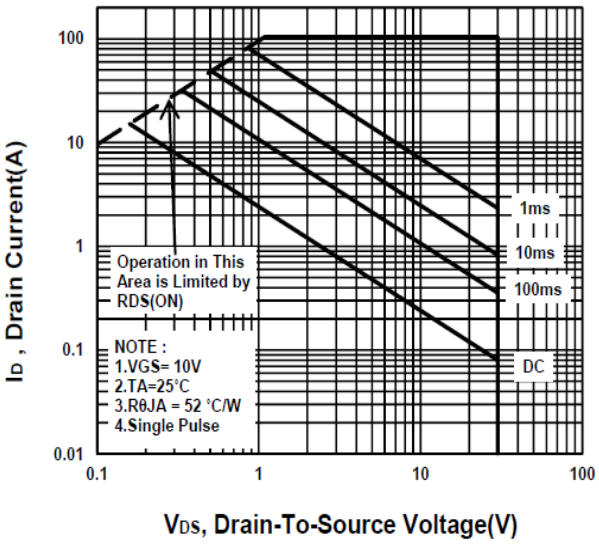
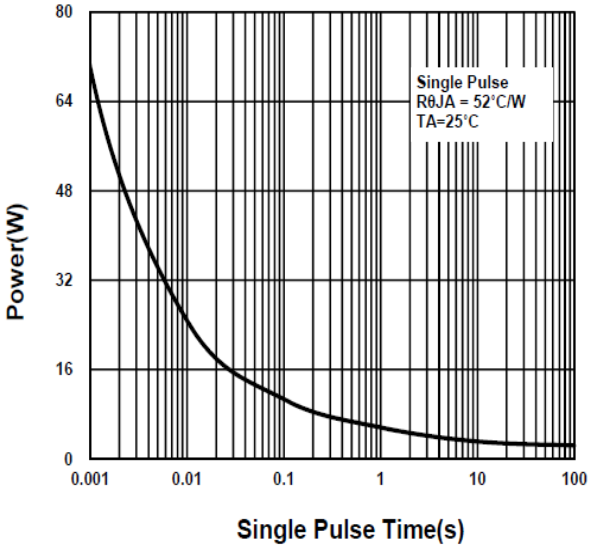
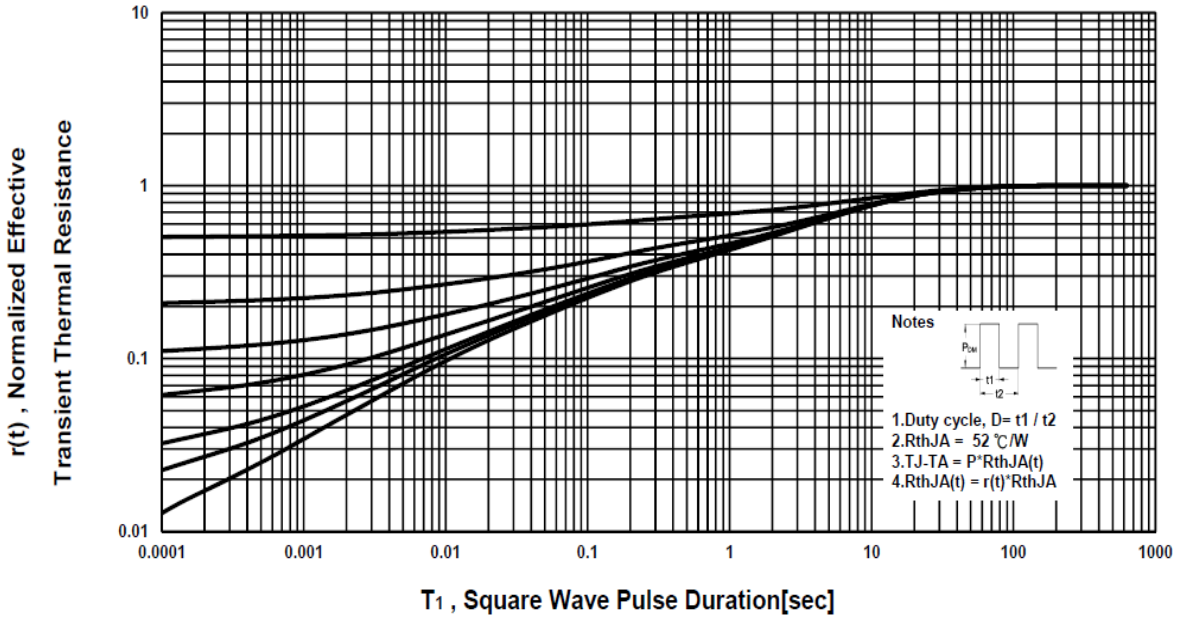
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

PDFN 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