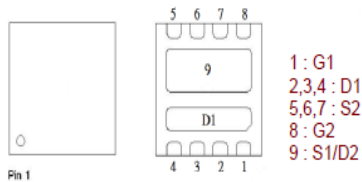


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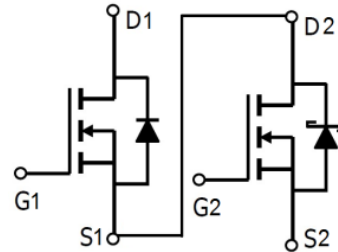
Dual N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

	V _{(BR)DSS}	R _{DS(ON)}	I _D
Q2	30V	7.5mΩ @V _{GS} = 10V	39A
Q1	30V	20mΩ @V _{GS} = 10V	21A



PDFN 3X3S



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

PARAMETERS/TEST CONDITIONS		SYMBOL	Q2	Q1	UNITS
Drain-Source Voltage		V _{DS}	30	30	V
Gate-Source Voltage		V _{GS}	±20	±20	
Continuous Drain Current ³	T _C = 25 °C	I _D	39	21	A
	T _C = 100 °C		24	13	
Pulsed Drain Current ¹		I _{DM}	50	32	
Continuous Drain Current	T _A = 25 °C	I _D	14	8	
	T _A = 70 °C		11	6.5	
Avalanche Current		I _{AS}	22	12	mJ
Avalanche Energy		E _{AS}	24	7.2	
Power Dissipation	T _C = 25 °C	P _D	21	16	W
	T _C = 100 °C		8.6	6	
Power Dissipation ⁴	T _A = 25 °C	P _D	2.7	2.5	
	T _A = 70 °C		1.7	1.6	
Operating Junction & Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	Q2 Max	Q1 Max	UNITS
Junction-to-Ambient ²	t ≤ 10s	R _{θJA}	45	50	°C / W
	Steady-State		55	77	
Junction-to-case	Steady-State	R _{θJC}	5.8	7.5	

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

²The value of R_{θJA} is measured with the device mounted on 1in² 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.

³Package limitation current is Q2= 19A , Q1= 5.5A.

⁴The Power dissipation is based on R_{θJA} t ≤ 10s value.

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

PARAMETER	SYMBOL		TEST CONDITIONS	LIMITS			UNITS	
				MIN	TYP	MAX		
STATIC								
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$		$V_{GS} = 0V, I_D = 10mA$	Q2	30		V	
			$V_{GS} = 0V, I_D = 250\mu A$	Q1	30			
Gate Threshold Voltage	$V_{GS(th)}$		$V_{DS} = V_{GS}, I_D = 250\mu A$	Q2	1.3	1.7	2.3	
				Q1	1.3	1.7	2.3	
Gate-Body Leakage	I_{GSS}		$V_{DS} = 0V, V_{GS} = \pm 20V$	Q2			± 100	
				Q1			± 100	
Zero Gate Voltage Drain Current	I_{DSS}		$V_{DS} = 24V, V_{GS} = 0V$	Q2			0.5	mA
				Q1			1	uA
			$V_{DS} = 20V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$	Q2			5	mA
				Q1			10	uA
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$		$V_{GS} = 4.5V, I_D = 10A$	Q2		7	10.5	mΩ
			$V_{GS} = 4.5V, I_D = 6A$	Q1		22	31	
			$V_{GS} = 10V, I_D = 10A$	Q2		5.3	7.5	
			$V_{GS} = 10V, I_D = 8A$	Q1		15.5	20	
Forward Transconductance ¹	g_{fs}		$V_{DS} = 5V, I_D = 10A$	Q2		52		S
			$V_{DS} = 5V, I_D = 8A$	Q1		28		
DYNAMIC								
Input Capacitance	C_{iss}		$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	Q2		1075		pF
				Q1		323		
Output Capacitance	C_{oss}	Q2			215			
		Q1			71			
Reverse Transfer Capacitance	C_{rss}	Q2			155			
		Q1			47			
Total Gate Charge ²	Q_g	$V_{DS} = 15V, V_{GS} = 10V, I_D = 10A$ $V_{DS} = 15V, V_{GS} = 10V, I_D = 8A$	$V_{GS} = 10V$	Q2		20		nC
			$V_{GS} = 4.5V$	Q1		7.7		
					Q2		11	
					Q1		4.2	
Gate-Source Charge ²	Q_{gs}			Q2		2.4		
			Q1		1.3			
Gate-Drain Charge ²	Q_{gd}		Q2		5.8			
			Q1		2.2			

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Turn-On Delay Time ²	t _{d(on)}	Q2 V _{DS} = 15V , I _D ≅ 10A, V _{GS} = 10V, R _{GEN} =6Ω Q1 V _{DS} = 15V , I _D ≅ 8A, V _{GS} = 10V,R _{GEN} =6Ω	Q2		27		nS
Rise Time ²	t _r		Q1		17		
			Q2		25		
Turn-Off Delay Time ²	t _{d(off)}		Q1		17		
			Q2		51		
Fall Time ²	t _f		Q1		37		
			Q2		27		
			Q1		18		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)							
Continuous Current ³	I _S		Q2			35	A
			Q1			11	
Forward Voltage ¹	V _{SD}	I _F = 1A, V _{GS} = 0V	Q2			0.6	V
		I _F = 8A, V _{GS} = 0V	Q1			1.4	
Reverse Recovery Time	t _{rr}	Q2 I _F = 10A, dI _F /dt = 100A /μS	Q2		12		nS
			Q1		8.4		
Reverse Recovery Charge	Q _{rr}	Q1 I _F = 8A, dI _F /dt = 100A /μS	Q2		3.5		nC
			Q1		1.5		

¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

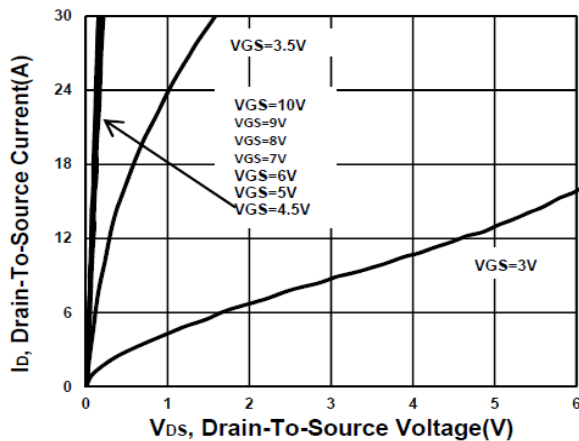
³Package limitation current is Q2=19A , Q1=5.5A.

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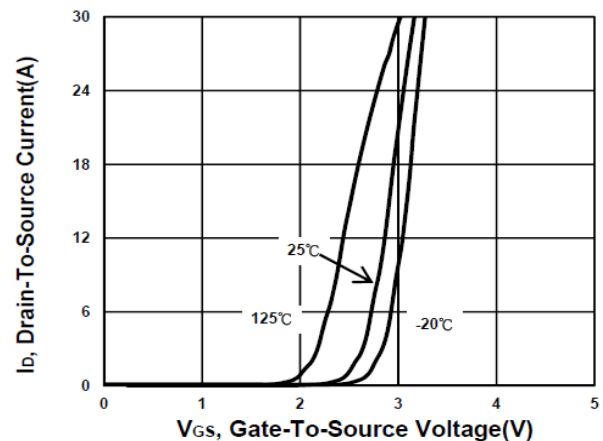
Dual N-Channel Enhancement Mode MOSFET

Q2

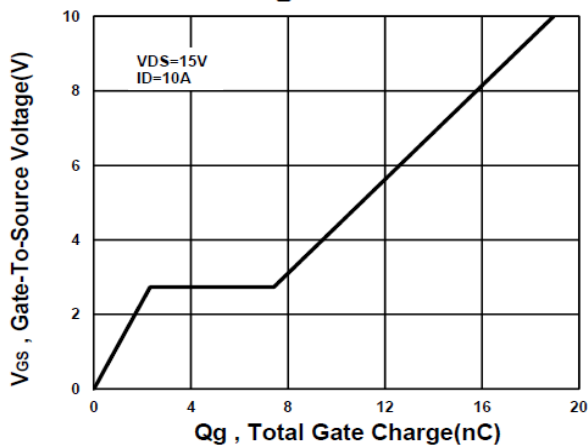
Output Characteristics



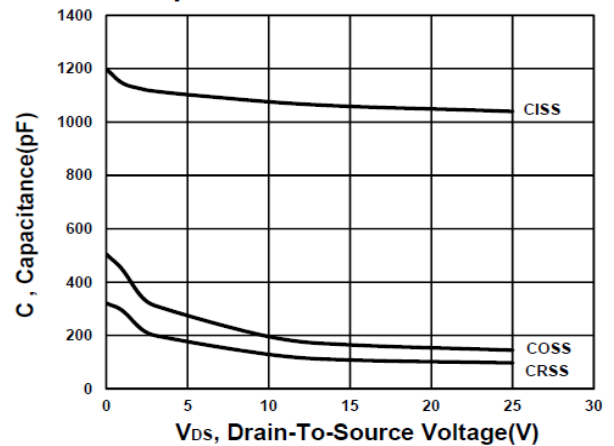
Transfer Characteristics



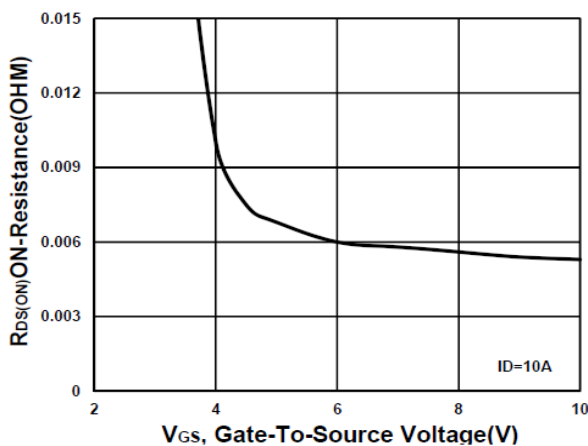
Gate charge Characteristics



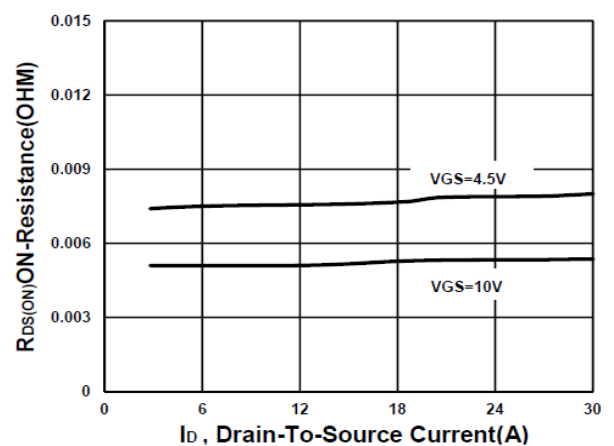
Capacitance Characteristic



On-Resistance VS Gate-To-Source



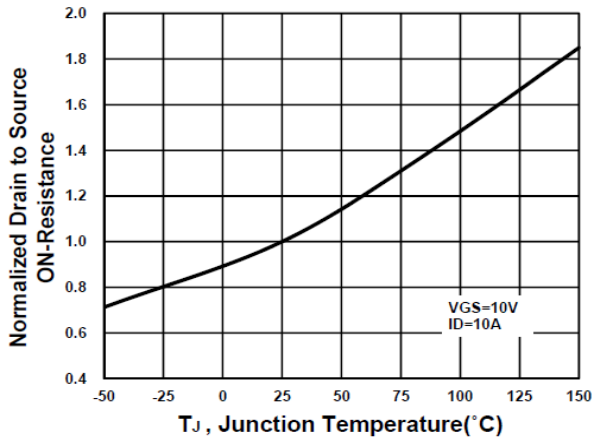
On-Resistance VS Drain Current



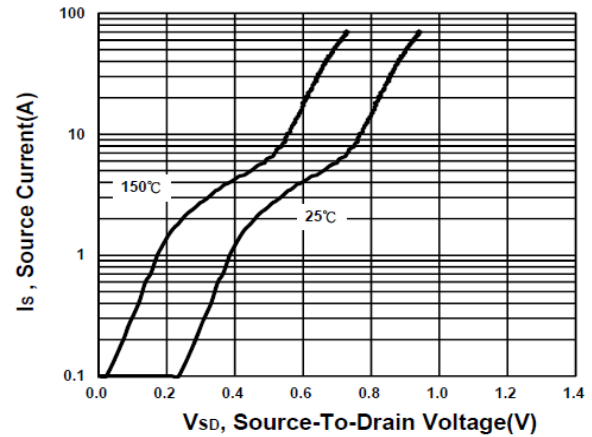
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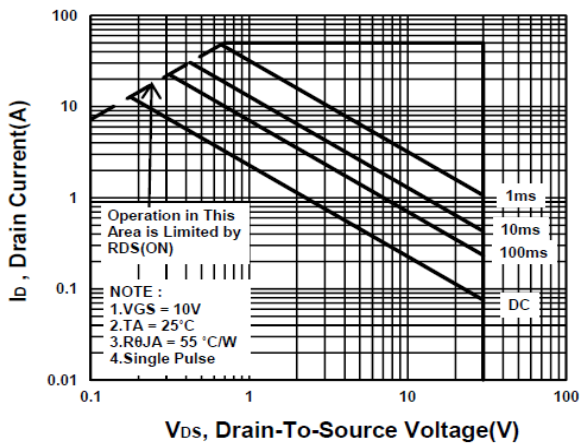
On-Resistance VS Temperature



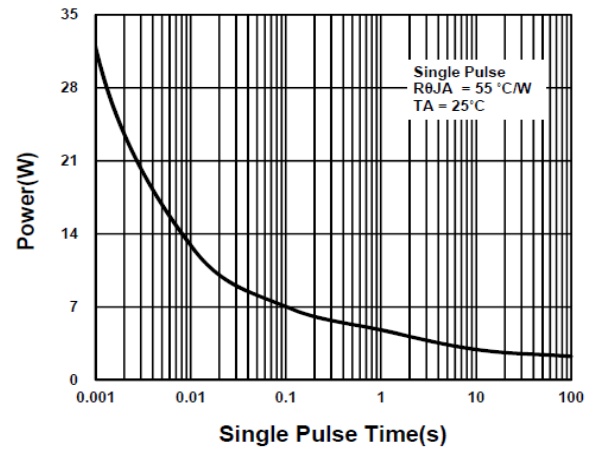
Source-Drain Diode Forward Voltage



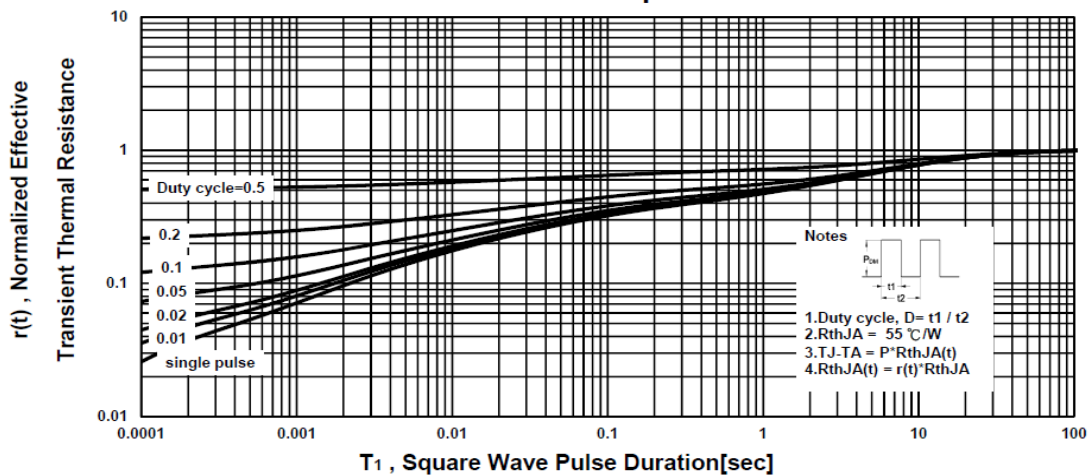
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

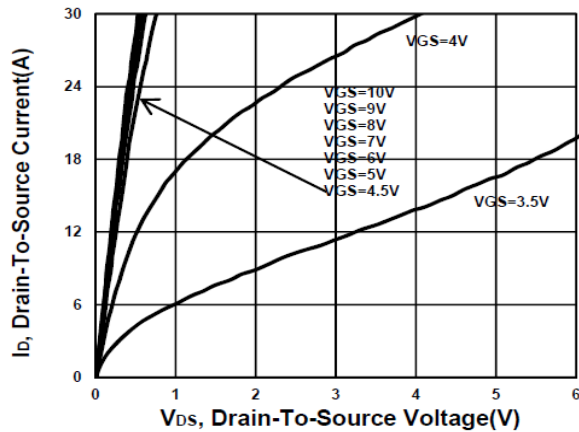


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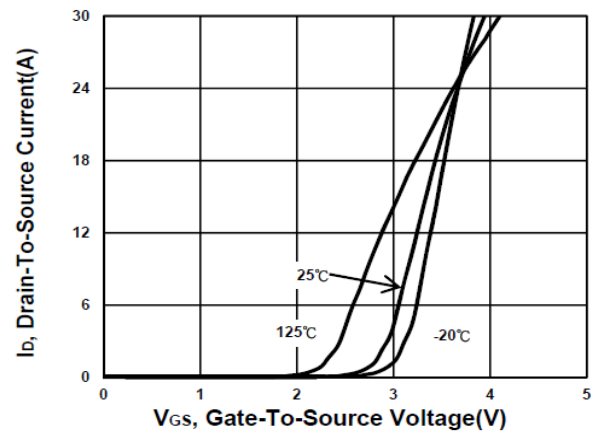
Dual N-Channel Enhancement Mode MOSFET

Q1

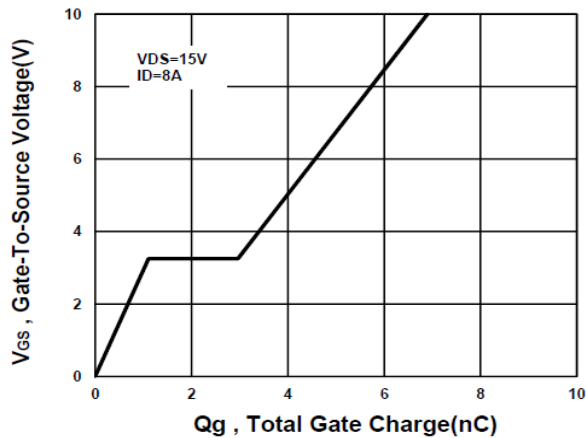
Output Characteristics



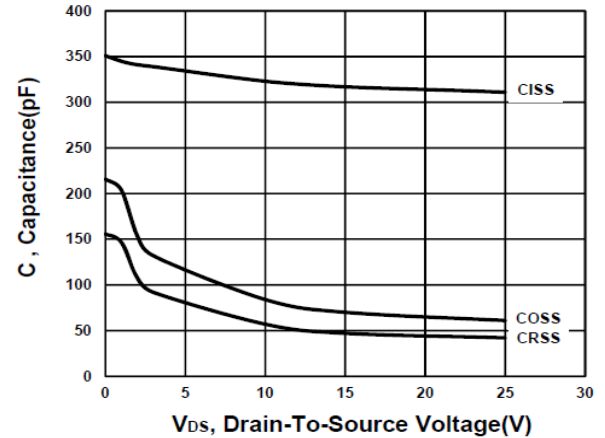
Transfer Characteristics



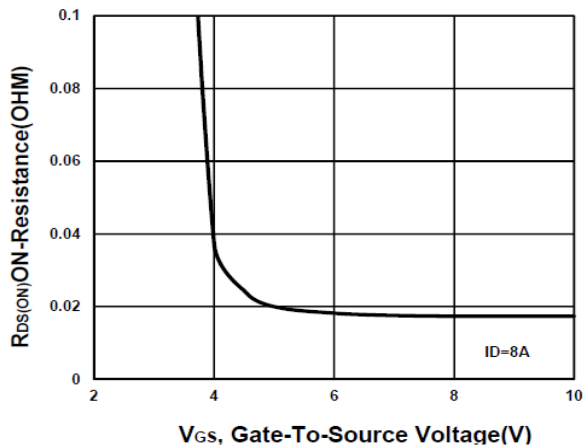
Gate charge Characteristics



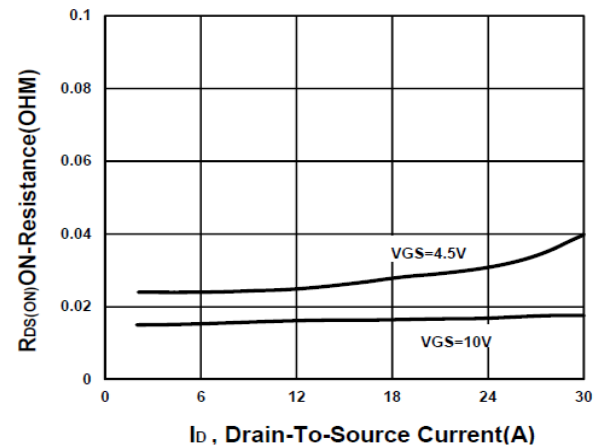
Capacitance Characteristic



On-Resistance VS Gate-To-Source



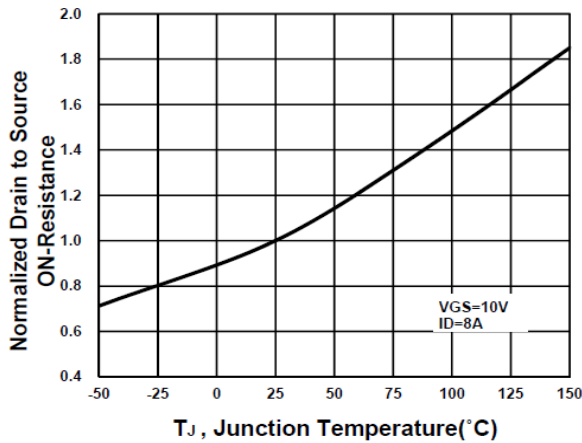
On-Resistance VS Drain Current



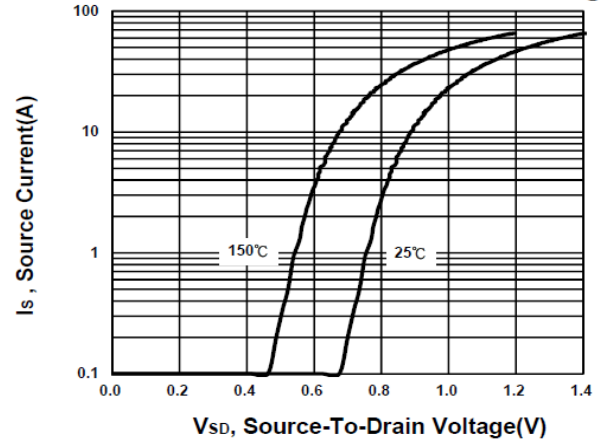
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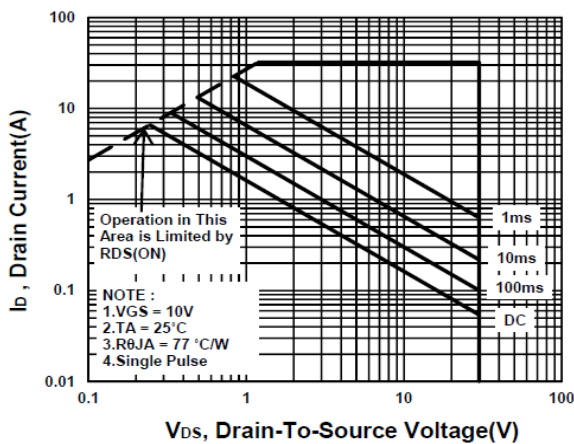
On-Resistance VS Temperature



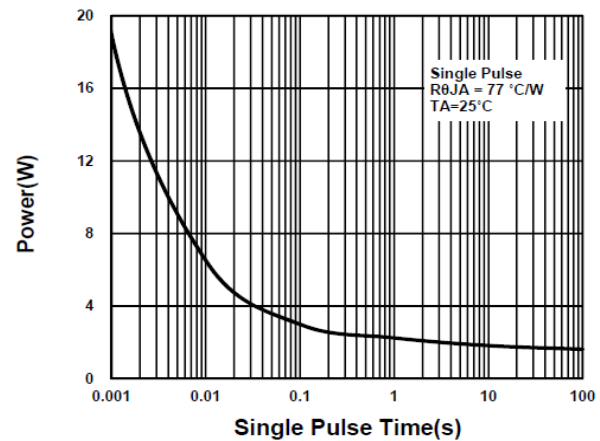
Source-Drain Diode Forward Voltage



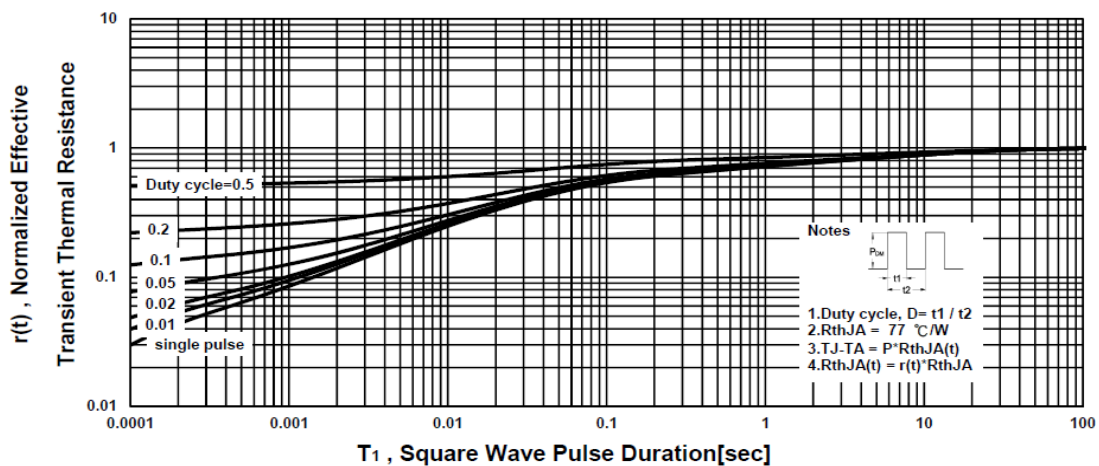
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



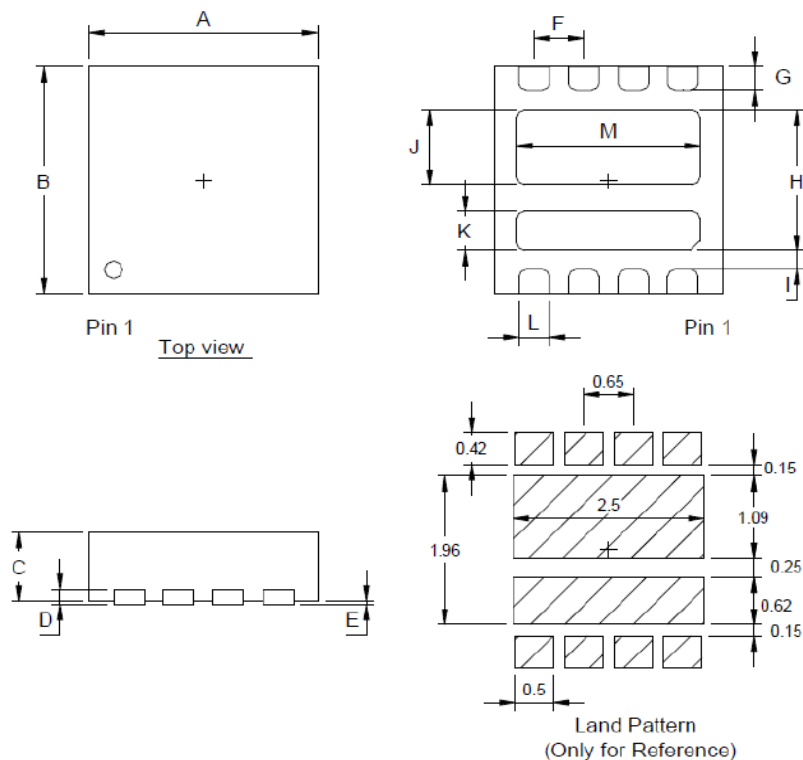
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Dual N-Channel Enhancement Mode MOSFET

Package Dimension

PDFN 3x3S(上下 Dual) MECHANICAL DATA

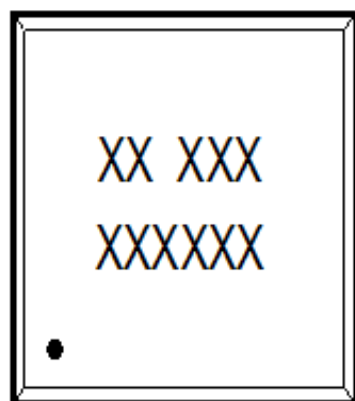
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	2.9	3	3.1	I		0.25	
B	2.9	3	3.1	J	0.94	0.99	1.04
C	0.8	0.85	0.9	K	0.47	0.52	0.57
D	0.195	0.203	0.211	L	0.35	0.4	0.45
E	0		0.05				
F		0.65					
G	0.27	0.32	0.37				
H		1.86					



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Dual N-Channel Enhancement Mode MOSFET

A. Marking Information(此产品代码为: J1)

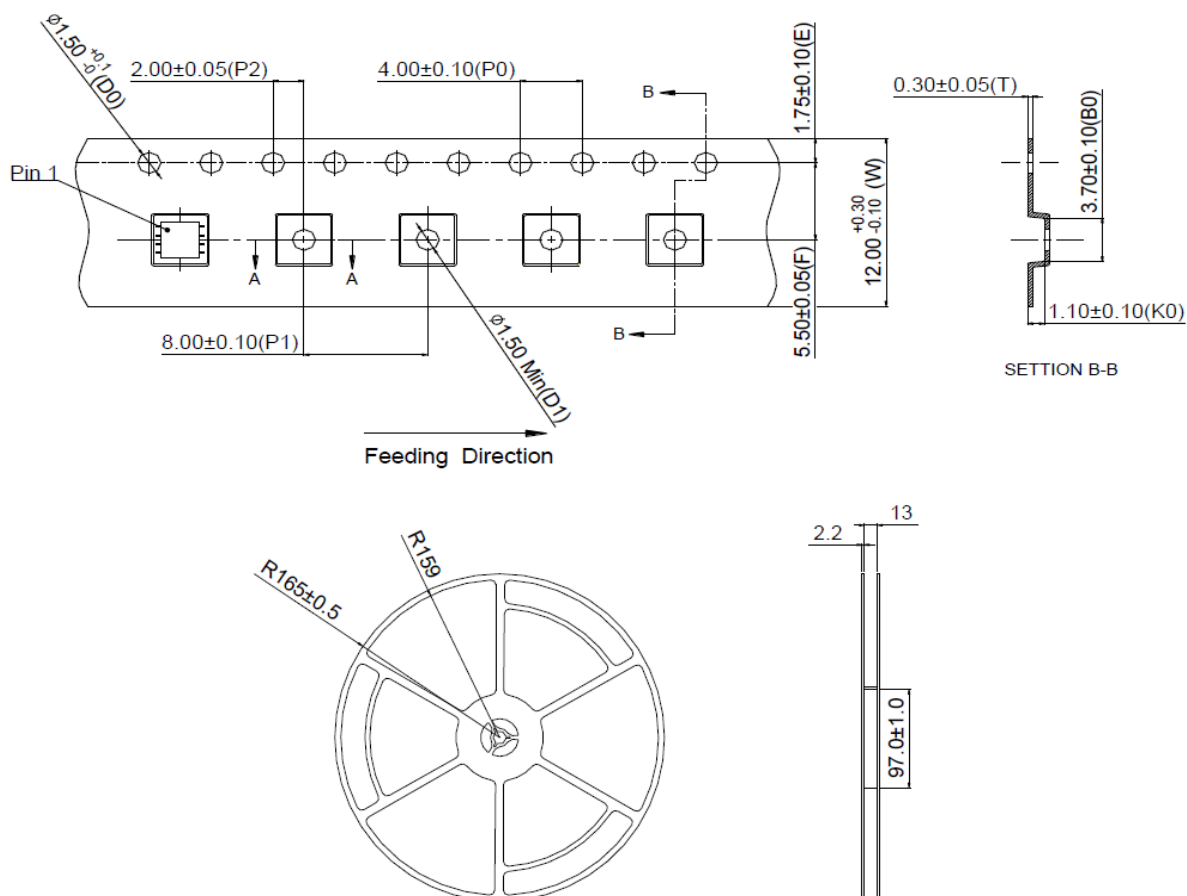


XX(前两码):产品代码

XXX

XXXXXX(后九码):LOT.NO

B. Tape & Reel Information: 5000pcs/Reel

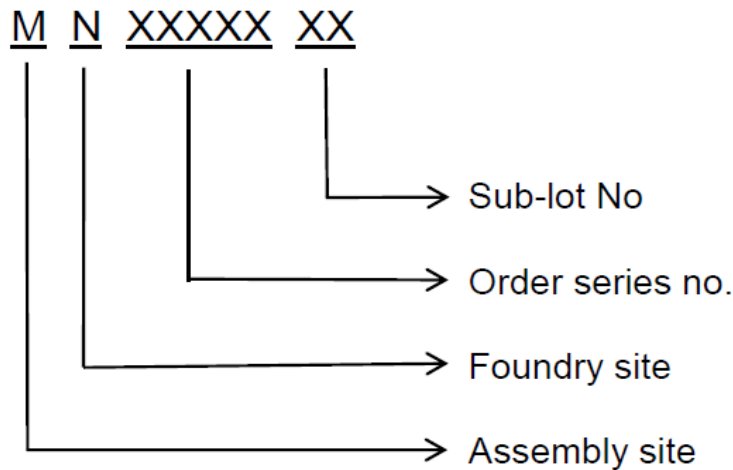


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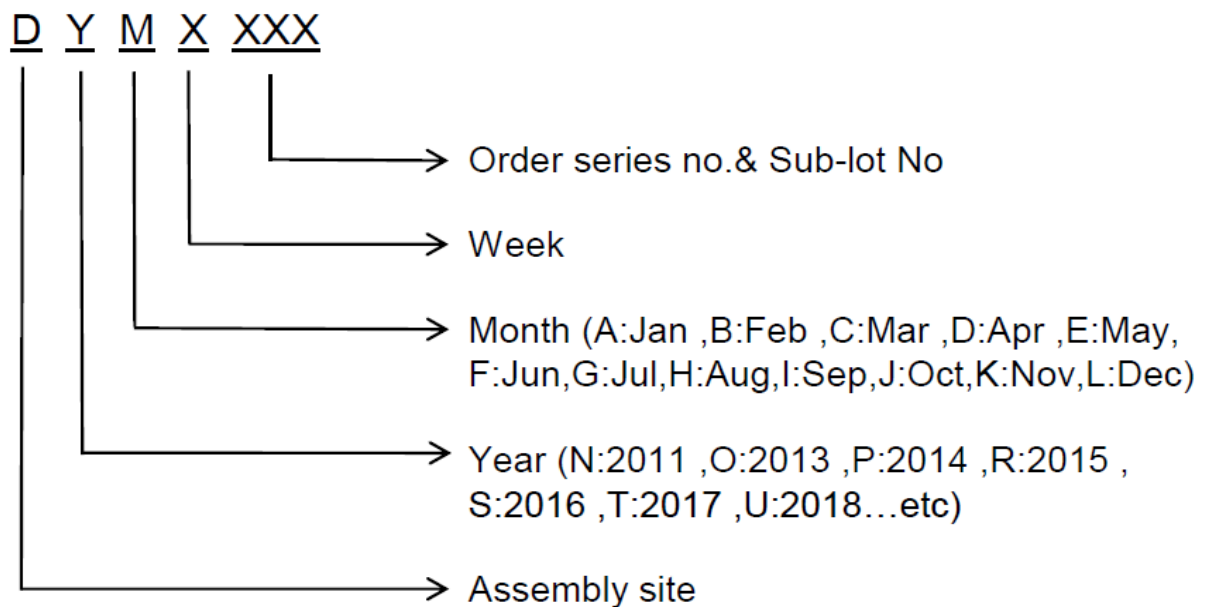
Dual N-Channel Enhancement Mode MOSFET

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"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