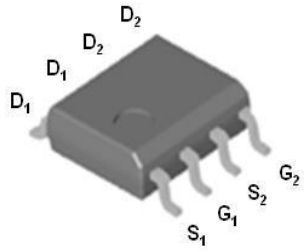
UNIKC Semiconductor

PV601CA

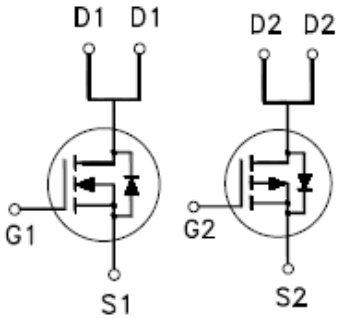
N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
30V	22mΩ @V_{GS} =10V	7A	N
-30V	28mΩ @V_{GS} = -10V	-6.4A	P



SOP-8



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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	
			P	±20	
Continuous Drain Current	T_A = 25 °C	I_D	N	7	A
			P	-6.4	
	T_A = 70°C		N	5.6	
			P	-5.1	
Pulsed Drain Current[1]		I_{DM}	N	25	
			P	-23	
Avalanche Current		I_{AS}	N	12	
			P	-19.9	
Avalanche Energy	L = 0.1mH	E_{AS}	N	7.2	mJ
			P	19.8	
Power Dissipation[3]	T_A = 25 °C	P_D	N	2	W
			P		
	T_A = 70 °C		N	1.3	
			P		
Junction & Storage Temperature Range		T_j, T_{stg}		-55 to 150	°C

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THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL		TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	t ≦10s	$R_{\theta JA}$	N-ch		60	°C / W
	Steady-State				77	
Junction-to-Ambient[2]	t ≦10s	$R_{\theta JA}$	P-ch		60	
	Steady-State				85	

[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 T_A =25°C.

[3]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

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	N	30			V
		V_{GS} = 0V, I_D = -250μA	P	-30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N	1	1.75	2.5	
		V_{DS} = V_{GS}, I_D = -250μA	P	-1	-1.5	-2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	N			±100	nA
		V_{DS} = 0V, V_{GS} = ±20V	P			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	N			1	μA
		V_{DS} = -24V, V_{GS} = 0V	P			-1	
		V_{DS} =20V, V_{GS} = 0V, T_J = 55 °C	N			10	
		V_{DS} = -20V, V_{GS} = 0V, T_J = 55 °C	P			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 6A	N		22	32	mΩ
		V_{GS} = -4.5V, I_D = -5A	P		32	45	
		V_{GS} = 10V, I_D = 7A	N		16	22	
		V_{GS} = -10V, I_D = -6A	P		22	28	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 7A	N		30		S
		V_{DS} = -10V, I_D = -6A	P		17		

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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		300		pF
			P		817		
Output Capacitance	C_{oss}		N		65		
			P		138		
Reverse Transfer Capacitance	C_{rss}		N		43		
			P		113		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	N		2.3		Ω
			P		12		
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 15V, V_{GS} = 10V, I_D =7A P-Channel V_{DS} = -15V, V_{GS} = -10V, I_D = -6A	N		7.4		nC
			P		20		
Gate-Source Charge[2]	Q_{gs}		N		0.8		
			P		1.7		
Gate-Drain Charge[2]	Q_{gd}		N		2.1		
			P		5.1		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 15V $I_D \cong$ 7A, V_{GS} = 10V, R_{GEN} = 6Ω P-Channel V_{DS} = -15V $I_D \cong$ -6A, V_{GS} = -10V, R_{GEN} = 6Ω	N		15		nS
			P		20.8		
Rise Time[2]	t_r		N		15		
			P		16.6		
Turn-Off Delay Time[2]	$t_{d(off)}$		N		32		
			P		44		
Fall Time[2]	t_f		N		15		
			P		14		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N			1.8	A
			P			-2	
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		9.5		nS
			P		12.2		
Reverse Recovery Charge	Q_{rr}		N		3		nC
			P		3.5		

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

[2]Independent of operating temperature.

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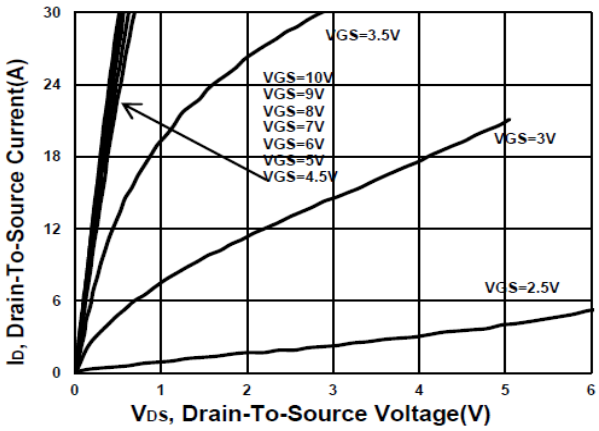
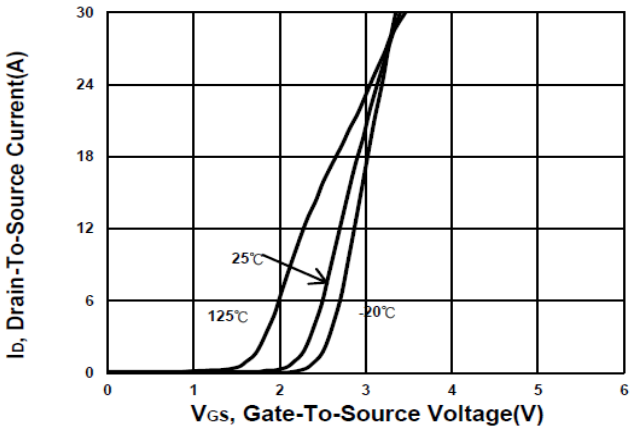
N-CHANNEL

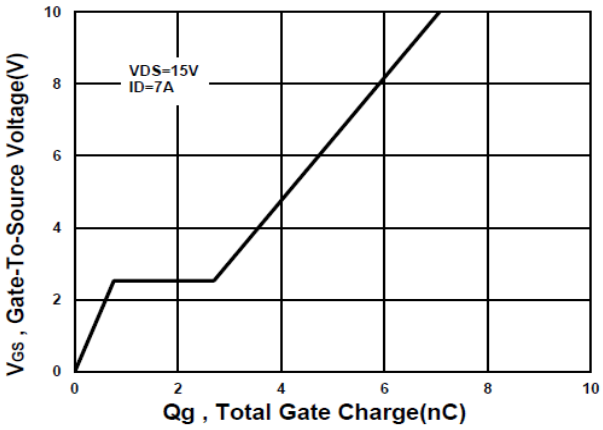
Output Characteristics



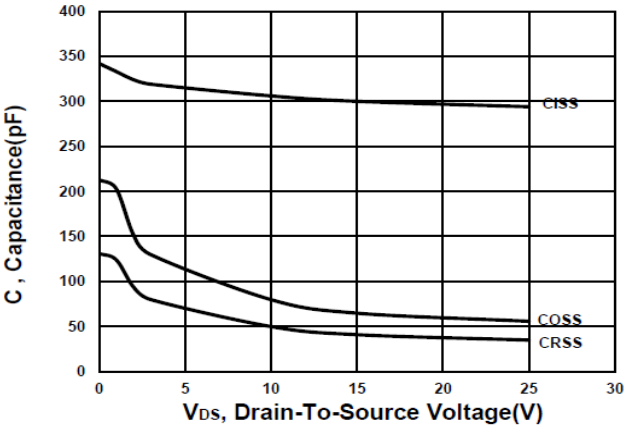
Transfer Characteristics



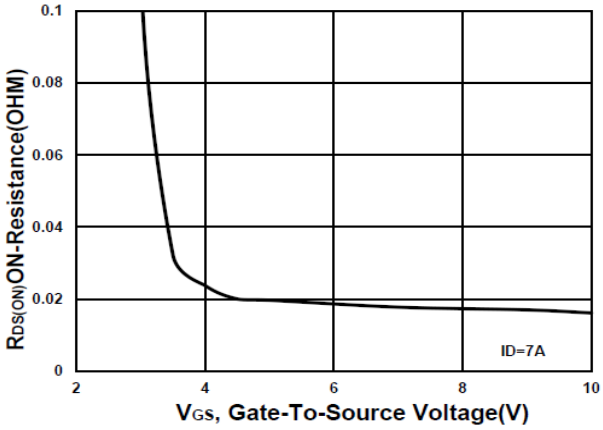
Gate charge Characteristics



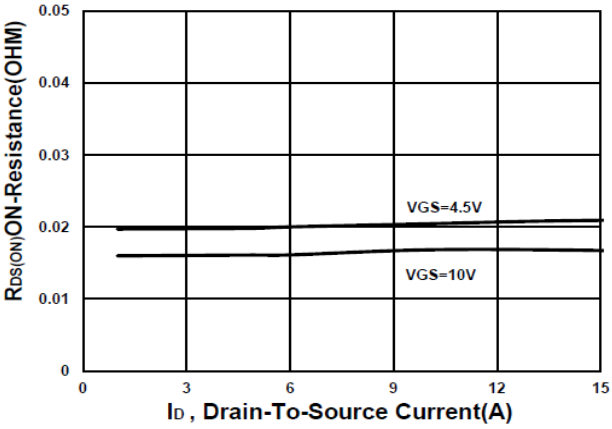
Capacitance Characteristic



On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



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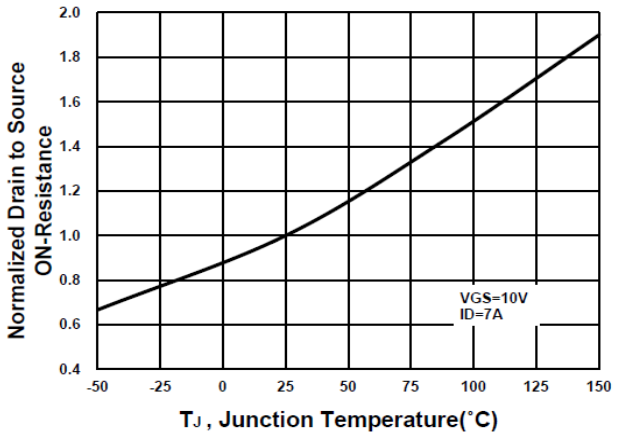
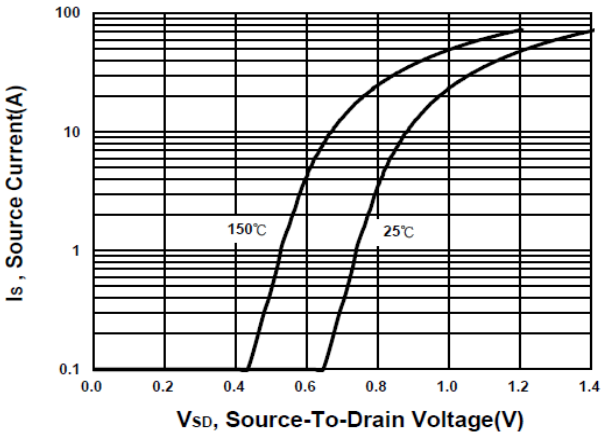
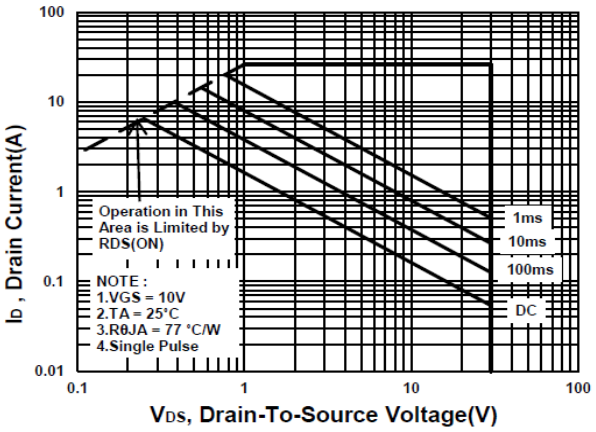
On-Resistance VS Temperature



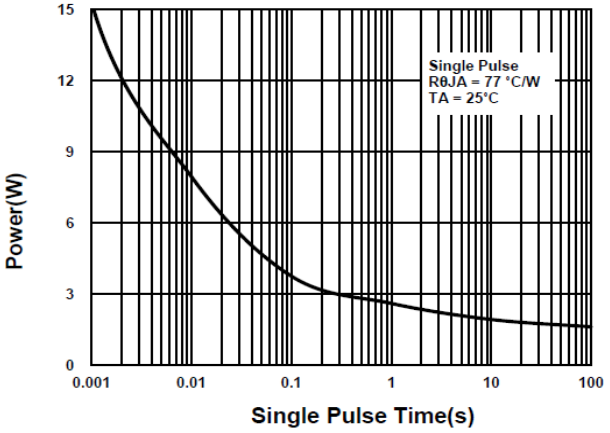
Source-Drain Diode Forward Voltage



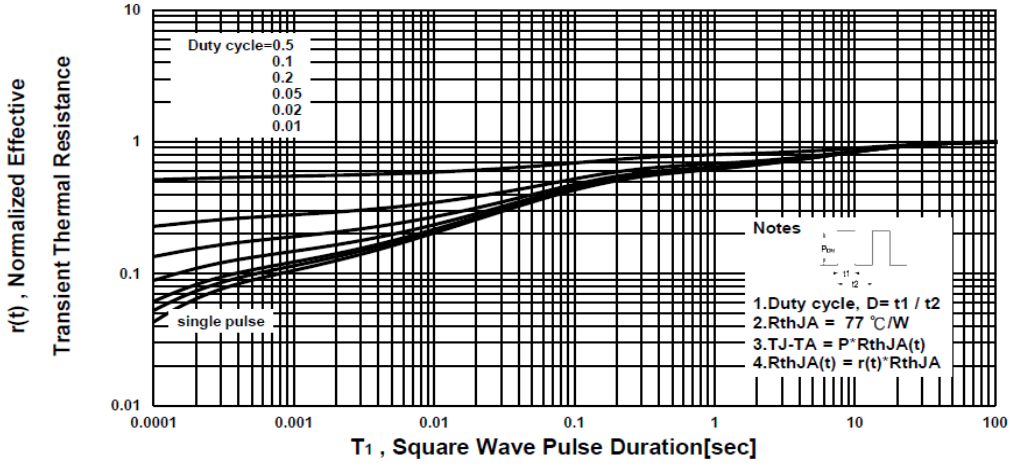
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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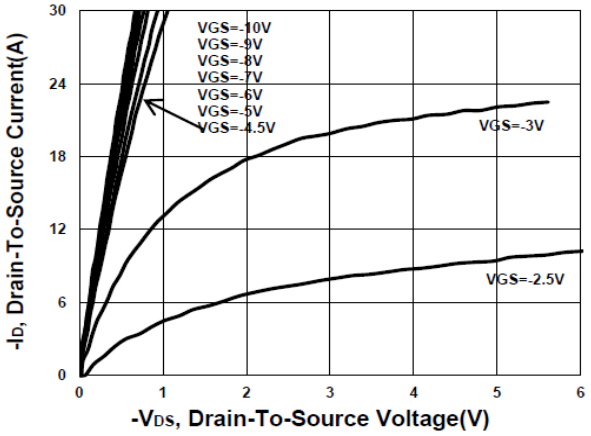
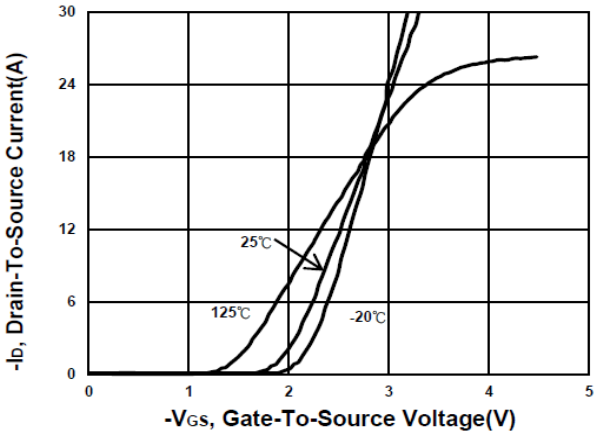
P-CHANNEL

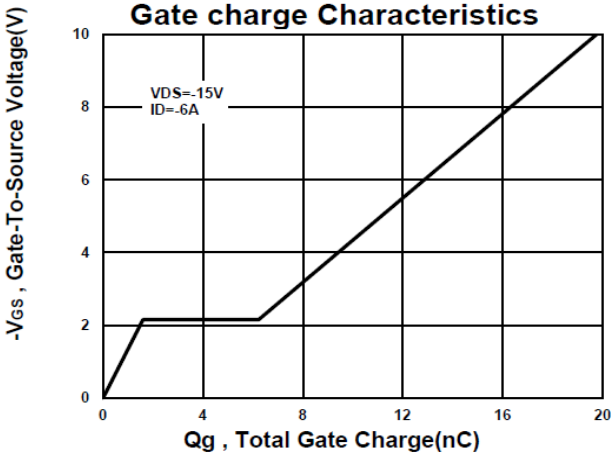
Output Characteristics



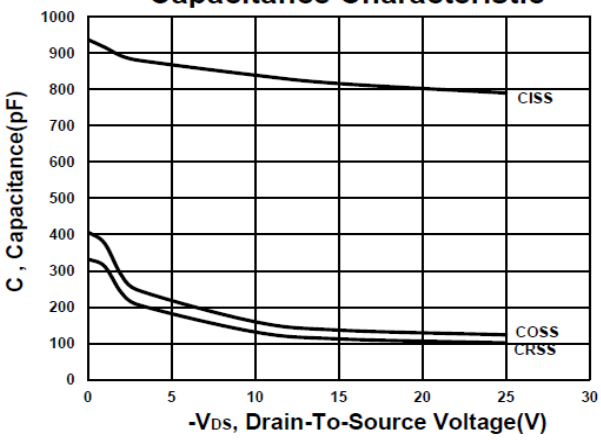
Transfer Characteristics



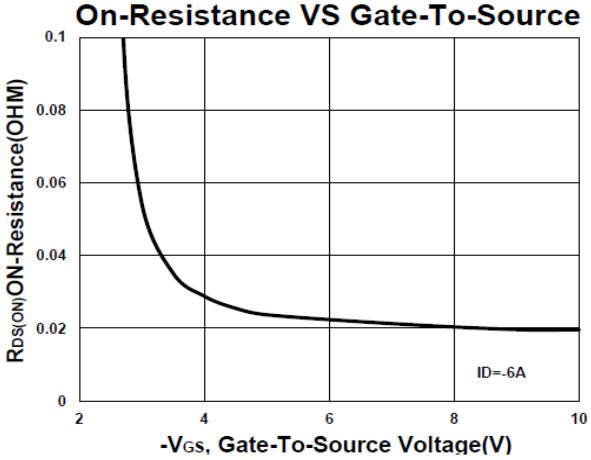
Gate charge Characteristics



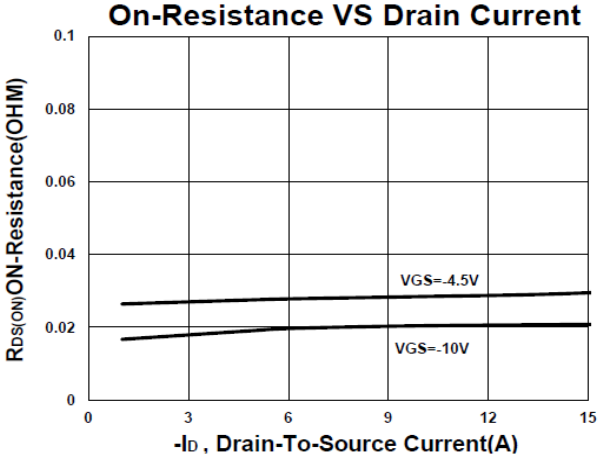
Capacitance Characteristic



On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



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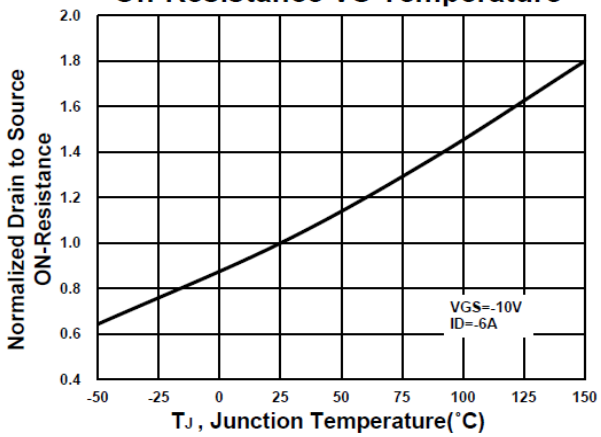
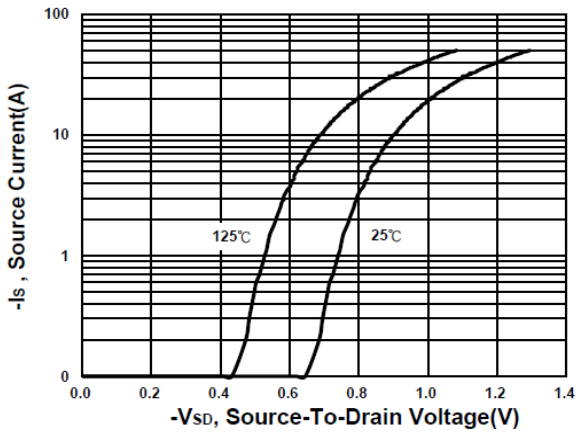
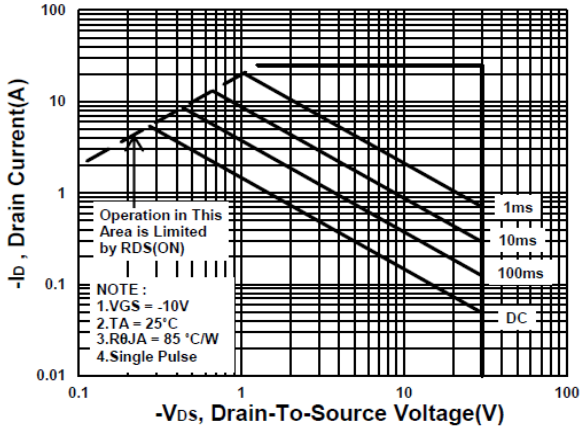
On-Resistance VS Temperature



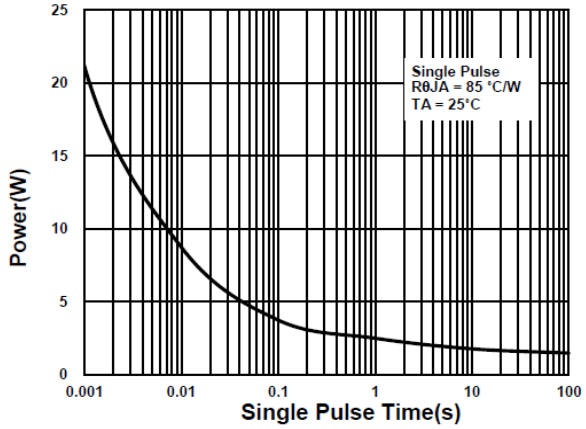
Source-Drain Diode Forward Voltage



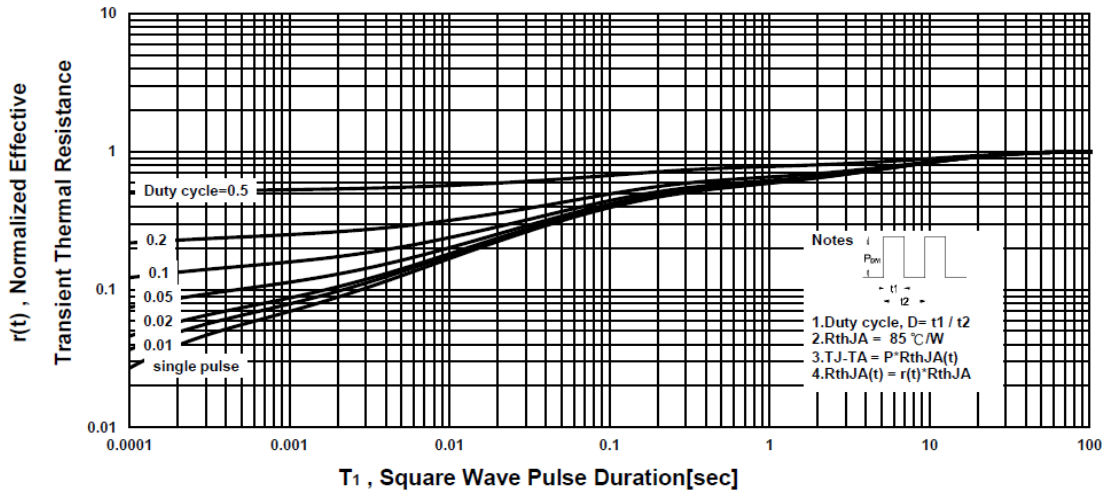
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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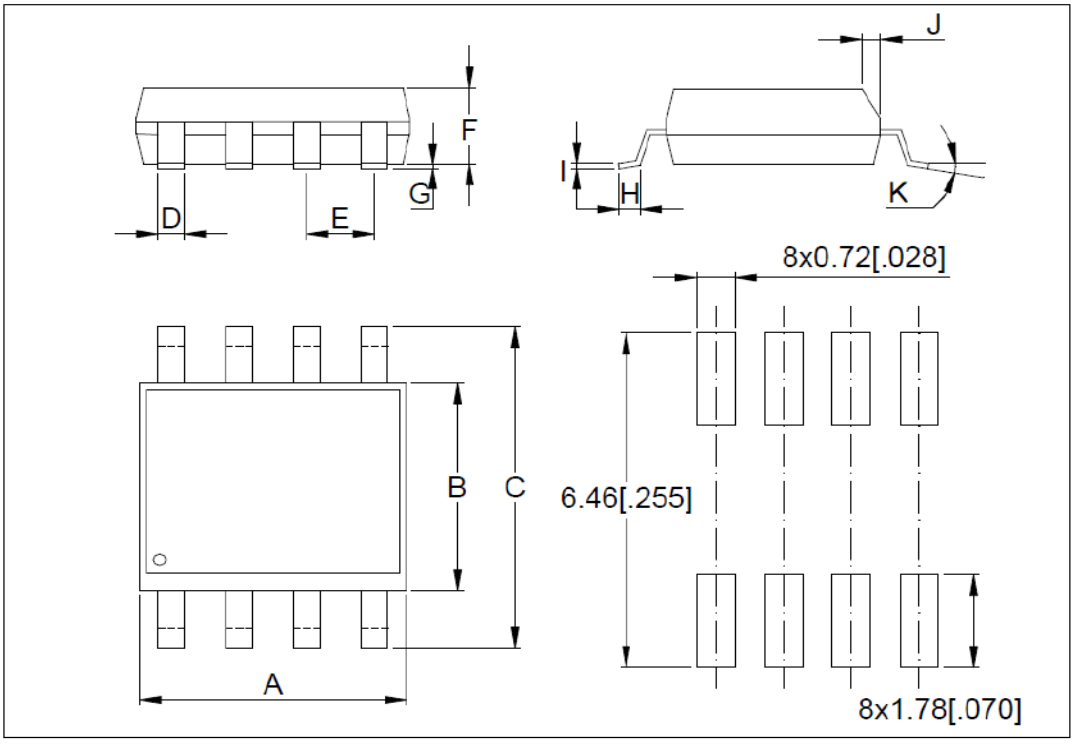
Package Dimension

SOP-8 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	4.9	5.0	H	0.4	0.6	0.93
B	3.8	3.9	4.0	I	0.19	0.21	0.25
C	5.79	6.0	6.2	J	0.25	0.375	0.5
D	0.33	0.4	0.51	K	0°	3°	18°
E	1.25	1.27	1.29				
F	1.1	1.3	1.65				
G	0.05	0.15	0.25				



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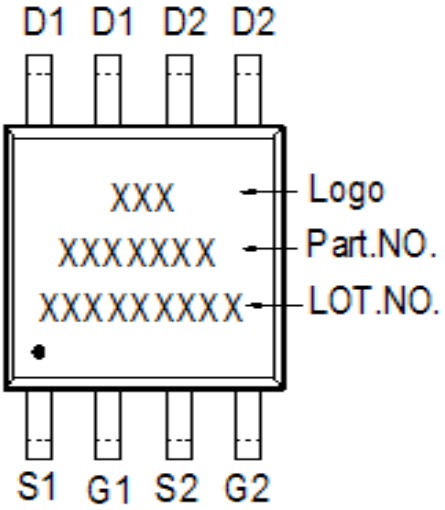
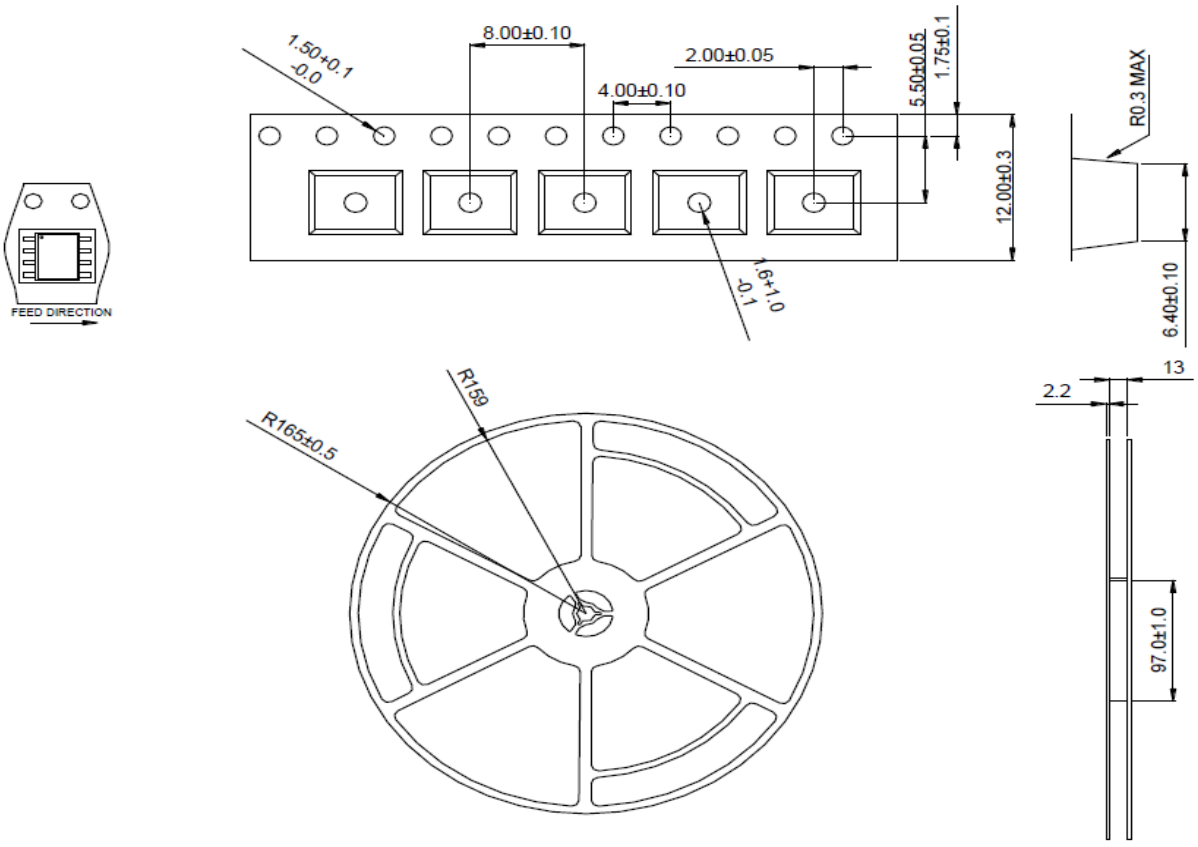
A. Marking Information



B. Tape&Reel Information:2500pcs/Reel



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C. Lot.No. & Date Code rule

1.LOT.NO.

M N 15M21 03

- 03 → #8~9 Sub-lot No
- 15M21 → Order series no.
- N → Foundry site
- M → Assembly site

2.Date Code

D Y M X XXX

- XXX → Order series no. & Sub-lot No
- X → Week
- M → M : Month (A:Jan , B:Feb , C:Mar ,D :Apr ,E:May ,F:Jun,G:Jul,H:Aug,I:Sep,J:Oct,K:Nov,L:Dec.)
- Y → Y : Year (N : 2011, O : 2012 ...)
- D → Assembly site

3.Date Code (for Small package)

XX Y WW

- WW → Week
- Y → Y : Year (9: 2009,A : 2010, B : 2011 ...)
- XX → Device Name

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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	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	Pb Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
11	Halogen Free label	G 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