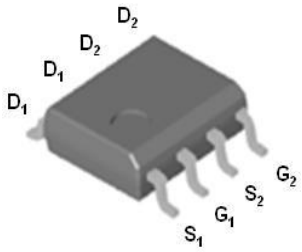
UNIKC Semiconductor

PV604CA

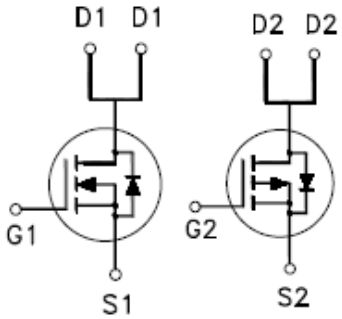
N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
40V	25mΩ @V_{GS} =10V	6A	N
-40V	35mΩ @V_{GS} = -10V	-5.5A	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	40	V
			P	-40	
Gate-Source Voltage		V_{GS}	N	±20	
			P	±20	
Continuous Drain Current	T_A = 25 °C	I_D	N	6	A
			P	-5.5	
	T_A = 70°C		N	5	
			P	-4.5	
Pulsed Drain Current[1]		I_{DM}	N	30	
			P	-25	
Avalanche Current		I_{AS}	N	12	
			P	-23	
Avalanche Energy	L = 0.1mH	E_{AS}	N	7.2	mJ
			P	26	
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				91	
Junction-to-Ambient[2]	t ≦10s	$R_{\theta JA}$	P-ch		60	
	Steady-State				90	

[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	40			V
		V_{GS} = 0V, I_D = -250μA	P	-40			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N	1.3	1.6	2.3	
		V_{DS} = V_{GS}, I_D = -250μA	P	-1	-1.7	-3	
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} = 32V, V_{GS} = 0V	N			1	μA
		V_{DS} = -32V, V_{GS} = 0V	P			-1	
		V_{DS} = 30V, V_{GS} = 0V, T_J = 55 °C	N			10	
		V_{DS} = -30V, 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	35	mΩ
		V_{GS} = -4.5V, I_D = -4.5A	P		34	50	
		V_{GS} = 10V, I_D = 6A	N		19	25	
		V_{GS} = -10V, I_D = -5.5A	P		27	35	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 6A	N		30		S
		V_{DS} = -10V, I_D = -5.5A	P		18		

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DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 20V, f = 1MHz	N		416		pF
			P		1142		
Output Capacitance	C_{oss}		N		58		
		P-Channel V_{GS} = 0V, V_{DS} = -20V, f = 1MHz	P		140		
Reverse Transfer Capacitance	C_{rss}		N		33		
			P		105		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	N		4		Ω
			P		6.3		
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 20V, V_{GS} = 10V, I_D =6A	N		9		nC
			P		24		
Gate-Source Charge[2]	Q_{gs}		N		1.3		
		P-Channel V_{DS} = -20V, V_{GS} = -10V, I_D = -5.5A	P		3.4		
Gate-Drain Charge[2]	Q_{gd}		N		2.3		
			P		5.5		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 20V,$I_D \cong$ 6A, V_{GS} = 10V, R_{GEN} = 6Ω	N		11		nS
			P		22		
Rise Time[2]	t_r		N		10		
			P		16		
Turn-Off Delay Time[2]	$t_{d(off)}$	P-Channel V_{DS} = -20V,$I_D \cong$ -5.5A, V_{GS} = -10V, R_{GEN} = 6Ω	N		24		
			P		50		
Fall Time[2]	t_f		N		10		
			P		25		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N			1.6	A
			P			-1.6	
Forward Voltage[1]	V_{SD}	I_F = 6A, V_{GS} = 0V	N			1.2	V
		I_F = -5.5A, V_{GS} = 0V	P			-1.2	
Reverse Recovery Time	t_{rr}	I_F = 6A, dI_F/dt = 100A / μS	N			9.3	nS
			P			14	
Reverse Recovery Charge	Q_{rr}	I_F = -5.5A, dI_F/dt = 100A / μS	N			2.2	nC
			P			5	

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

[2]Independent of operating temperature.

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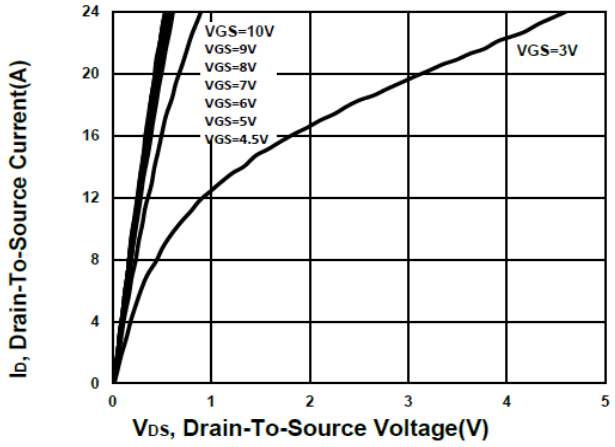
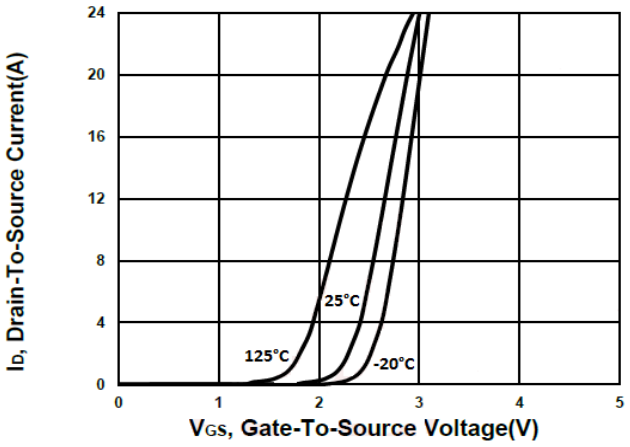
N-CHANNEL

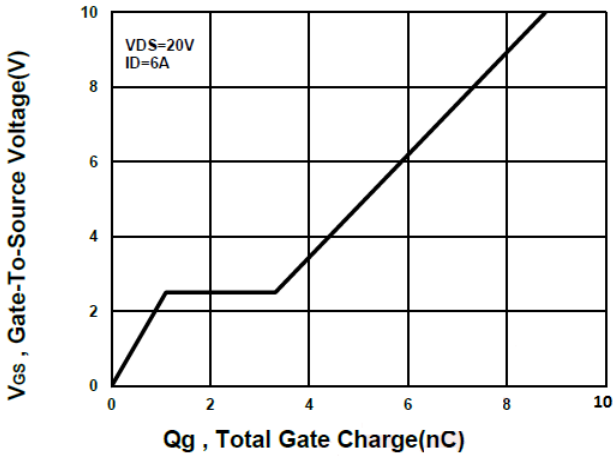
Output Characteristics



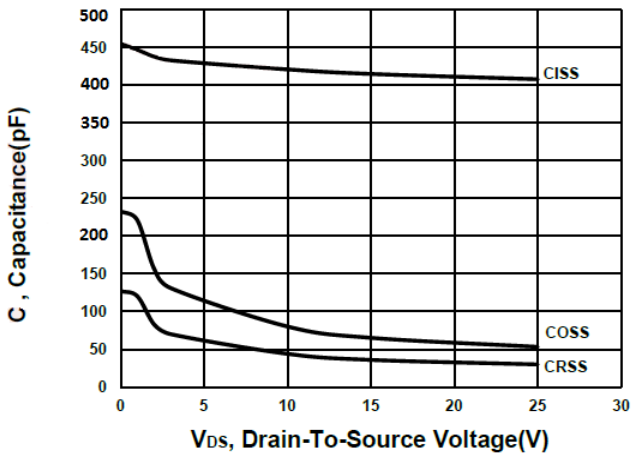
Transfer Characteristics



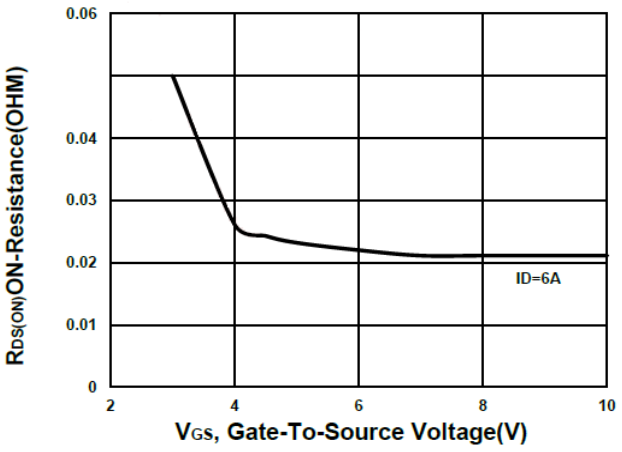
Gate charge Characteristics



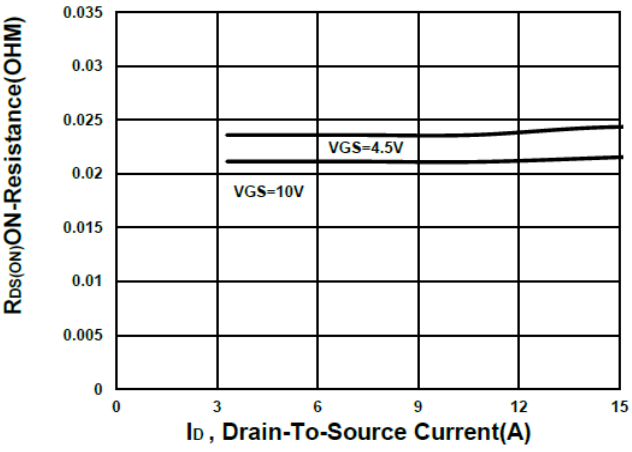
Capacitance Characteristic



On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



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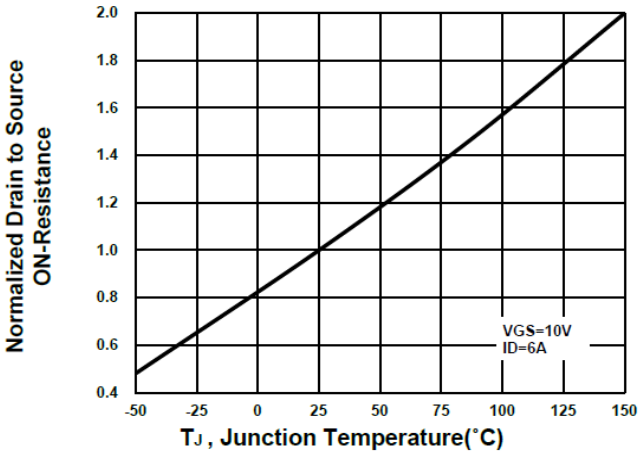
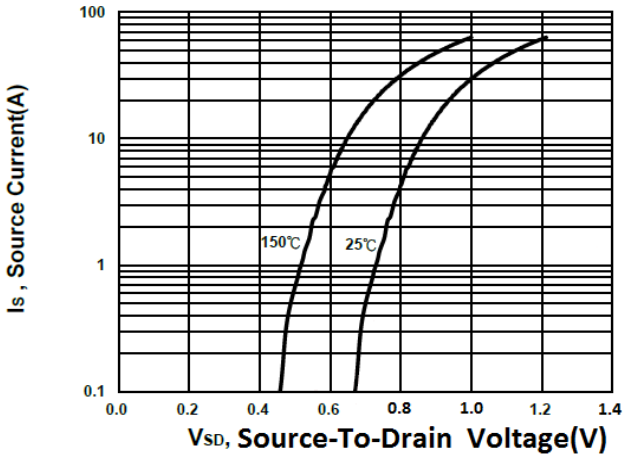
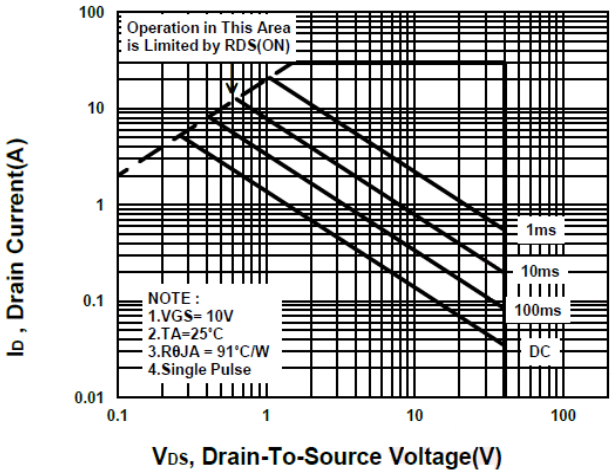
On-Resistance VS Temperature



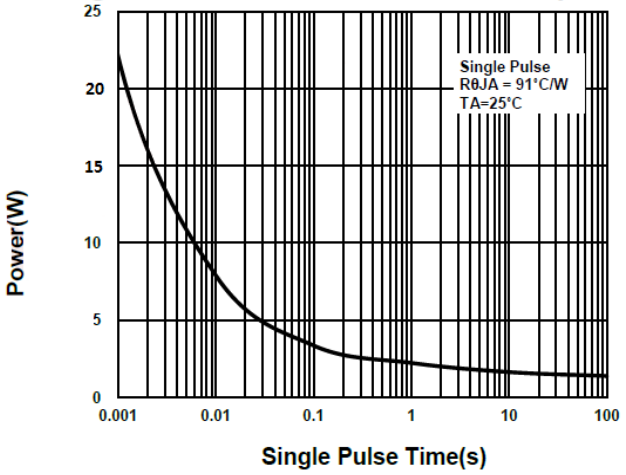
Source-Drain Diode Forward Voltage



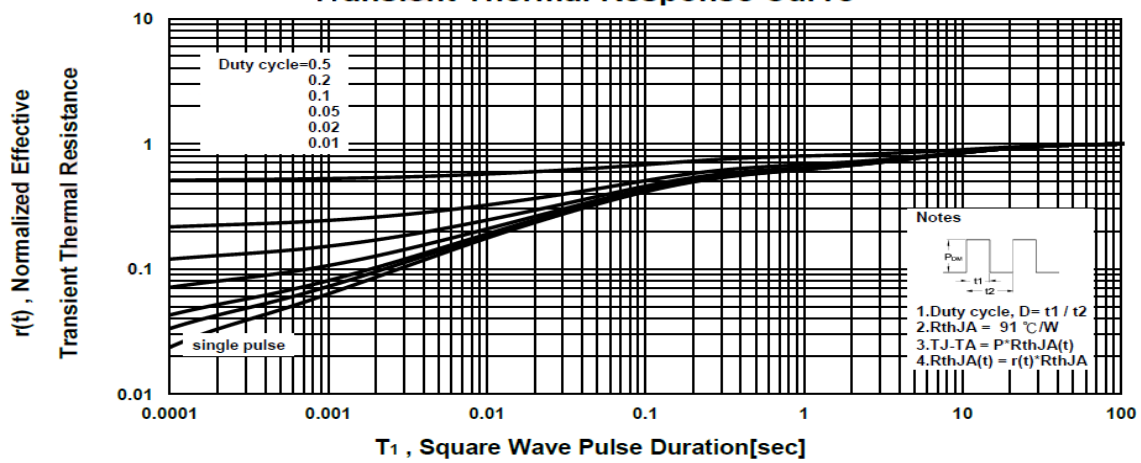
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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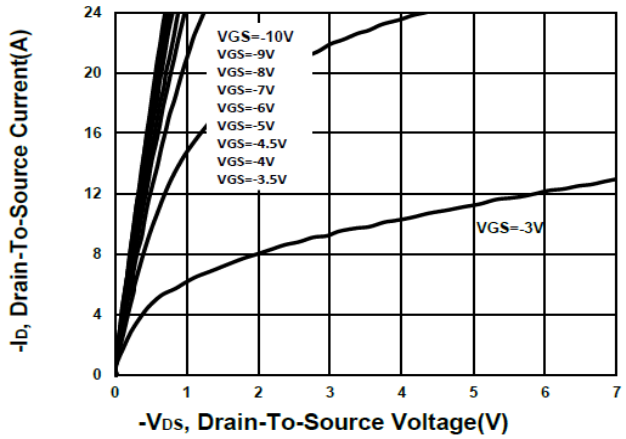
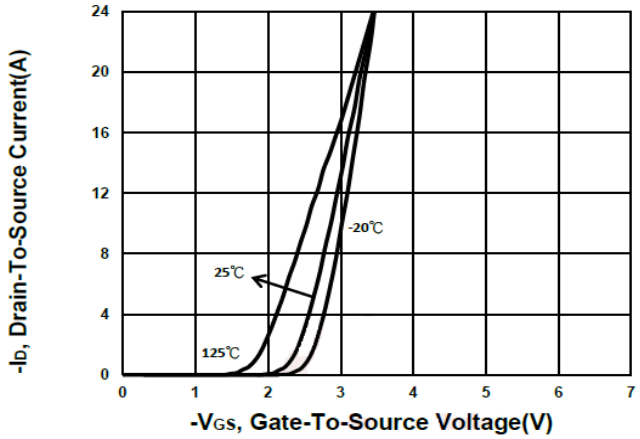
P-CHANNEL

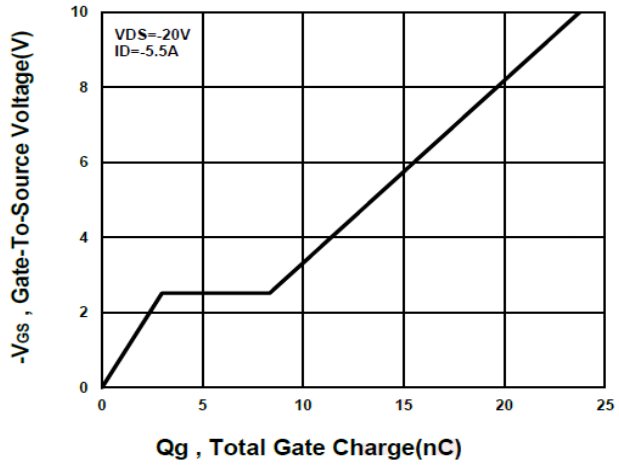
Output Characteristics



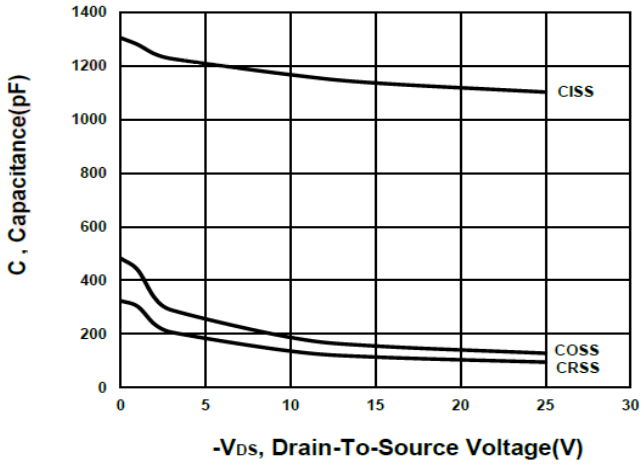
Transfer Characteristics



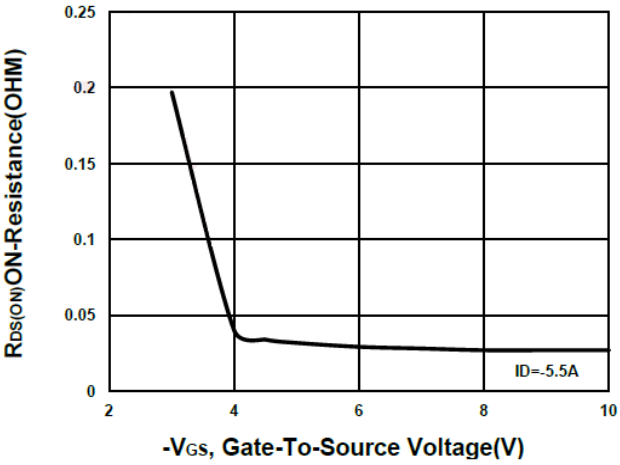
Gate charge Characteristics



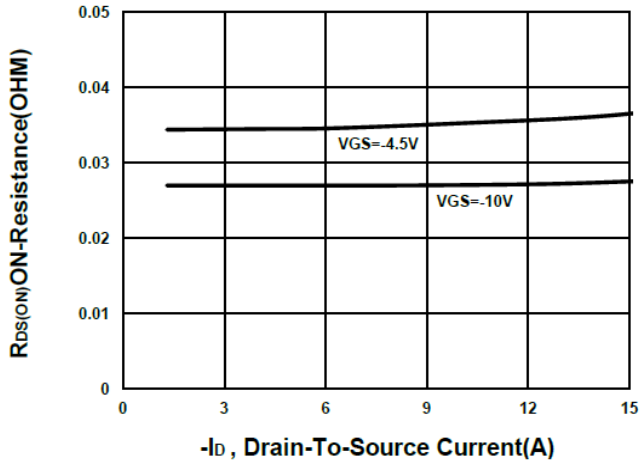
Capacitance Characteristic



On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



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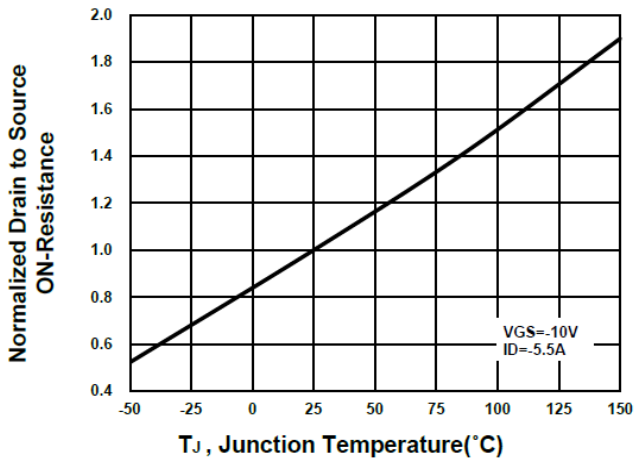
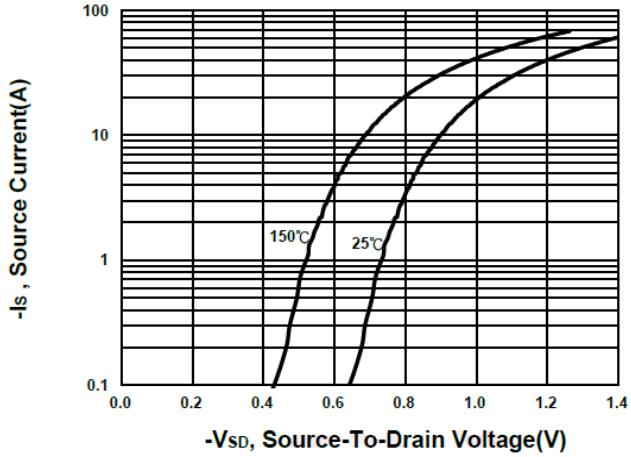
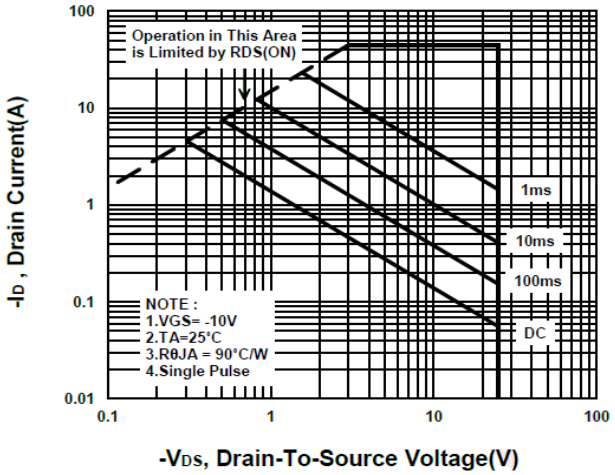
On-Resistance VS Temperature



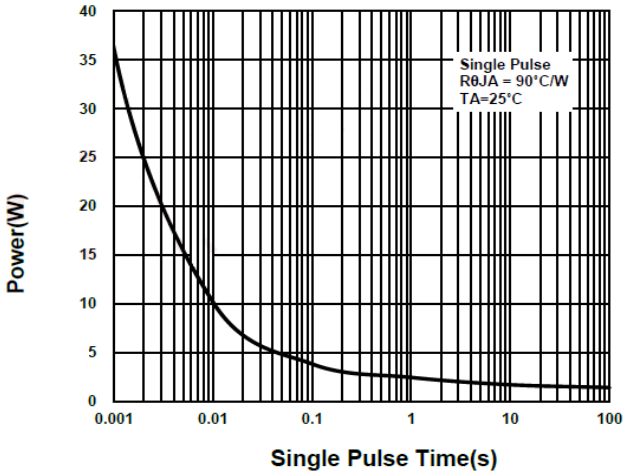
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



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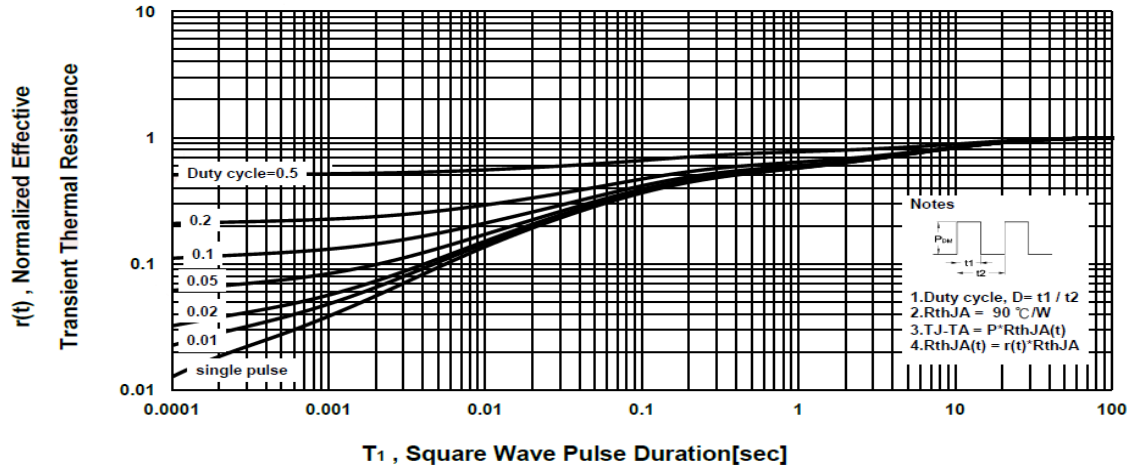

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Package Dimension

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