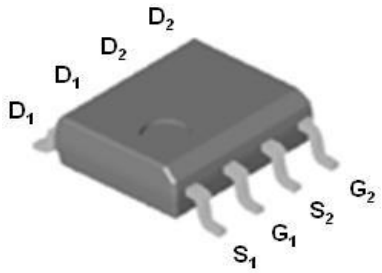
UNIKC Semiconductor

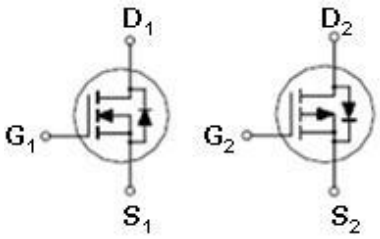
P2402OV

N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
20V	24mΩ @V_{GS} = 4.5V	10A	N
-20V	43mΩ @V_{GS} = -4.5V	-5.2A	P





SOP-8

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

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	N	20	V
			P	-20	
Gate-Source Voltage		V_{GS}	N	±12	
			P	±12	
Continuous Drain Current	T_A = 25 °C	I_D	N	10	A
			P	-5.2	
	T_A = 70 °C		N	6.3	
			P	-3.2	
Pulsed Drain Current[1]		I_{DM}	N	40	
			P	-21	
Power Dissipation	T_A = 25 °C	P_D	N	2.5	W
			P	2.5	
	T_A = 70 °C		N	1.6	
			P	1.6	
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	$R_{\theta JA}$		50	°C / W

[1]Pulse width limited by maximum junction temperature.

[2] Duty cycle ≤1%

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

PARAMETER	SYMBOL	TEST CONDITIONS	CH.	LIMITS			UNIT
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	N	20			V
		V_{GS} = 0V, I_D = -250μA	P	-20			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N	0.4	0.8	1.2	
		V_{DS} = V_{GS}, I_D = -250μA	P	-0.4	-0.8	-1.2	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V	N			±100	nA
		V_{DS} = 0V, V_{GS} = ±12V	P			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V	N			1	μA
		V_{DS} = -16V, V_{GS} = 0V	P			-1	
		V_{DS} = 16V, V_{GS} = 0V, T_J = 55 °C	N			10	
		V_{DS} = -16V, V_{GS} = 0V, T_J = 55 °C	P			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 2.5V, I_D = 5.2A	N		28	36	mΩ
		V_{GS} = -2.5V, I_D = -4A	P		47	68	
		V_{GS} = 4.5V, I_D = 8A	N		18	24	
		V_{GS} = -4.5V, I_D = -5A	P		32	43	

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DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 10V, f = 1MHz	N		732		pF
			P		1110		
Output Capacitance	C_{oss}		N		241		
		P-Channel V_{GS} = 0V, V_{DS} = -10V, f = 1MHz	P		242		
Reverse Transfer Capacitance	C_{rss}		N		169		
			P		173		
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 10V, V_{GS} = 4.5V, I_D = 5A	N		10		nC
			P		11		
Gate-Source Charge[2]	Q_{gs}		N		0.8		
		P-Channel V_{DS} = -10V, V_{GS} = -4.5V, I_D = -5A	P		2		
Gate-Drain Charge[2]	Q_{gd}		N		3.7		
			P		3.5		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 10V $I_D \cong$ 1A,V_{GS} = 4.5V,R_{GEN} =10Ω	N		6		nS
			P		23		
Rise Time[2]	t_r		N		5		
			P		45		
Turn-Off Delay Time[2]	$t_{d(off)}$	P-Channel V_{DS} = -4V, $I_D \cong$ -1A,V_{GS} = -4.5V,R_{GEN} =10Ω	N		16		
			P		45		
Fall Time[2]	t_f		N		5		
			P		32		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)							
Continuous Current	I_S		N			1.9	A
			P			-1.9	
Pulsed Current[3]	I_{SM}		N			7.6	
			P			-9	
Forward Voltage[1]	V_{SD}	I_F = 1A, V_{GS} = 0V	N			1.3	V
		I_F = -1A, V_{GS} = 0V	P			-1.3	

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

[2]Independent of operating temperature.

[3]Pulse width limited by maximum junction temperature.

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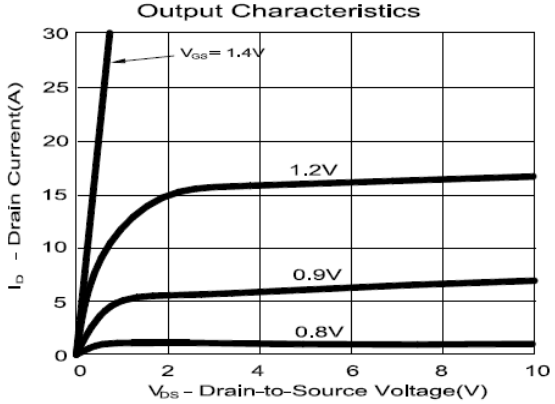
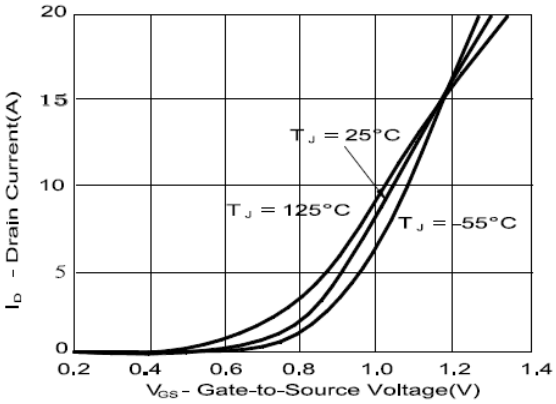
N-CHANNEL

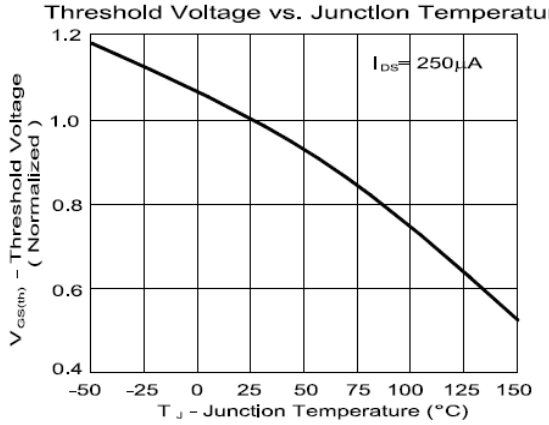
Output Characteristics



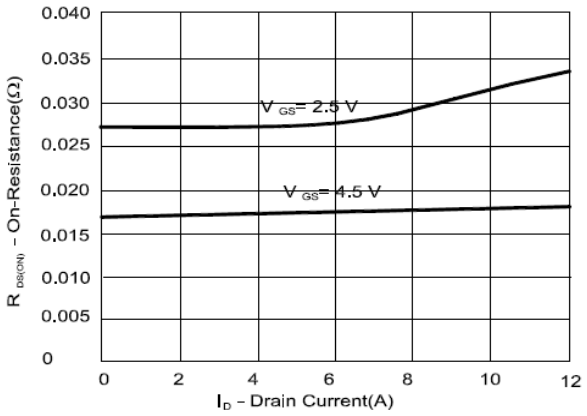
Transfer Characteristics



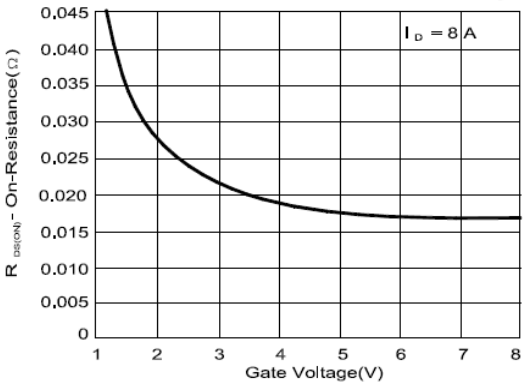
Threshold Voltage vs. Junction Temperature



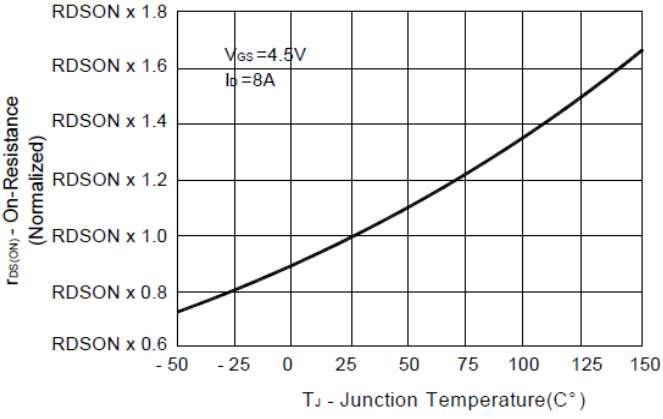
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature



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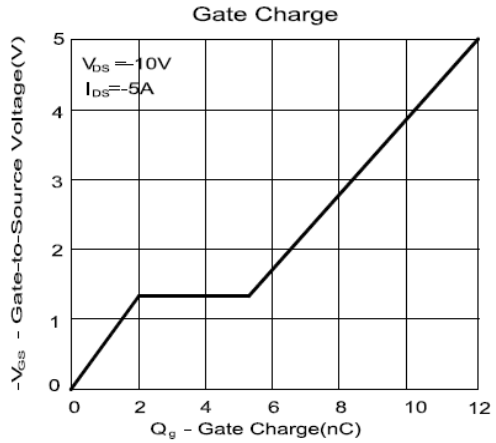

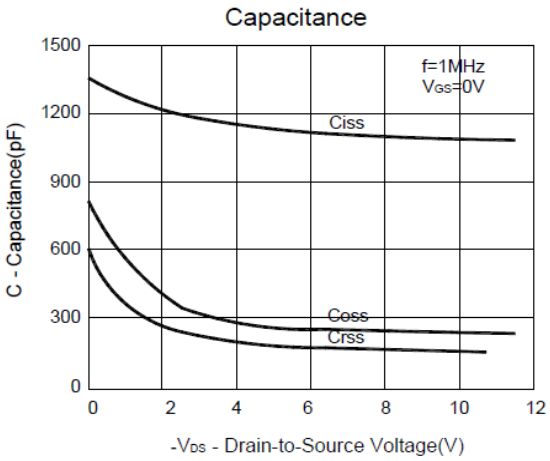

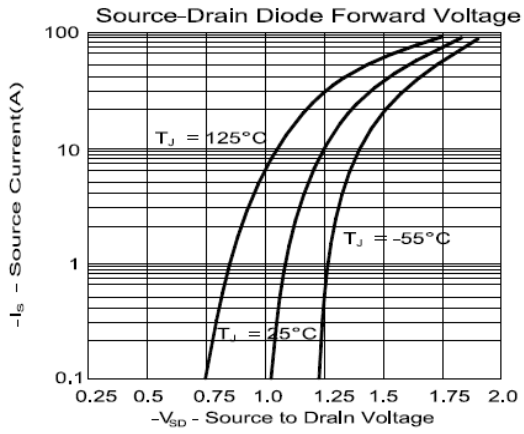

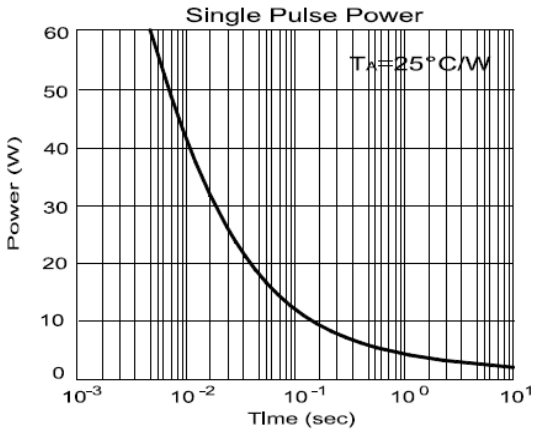

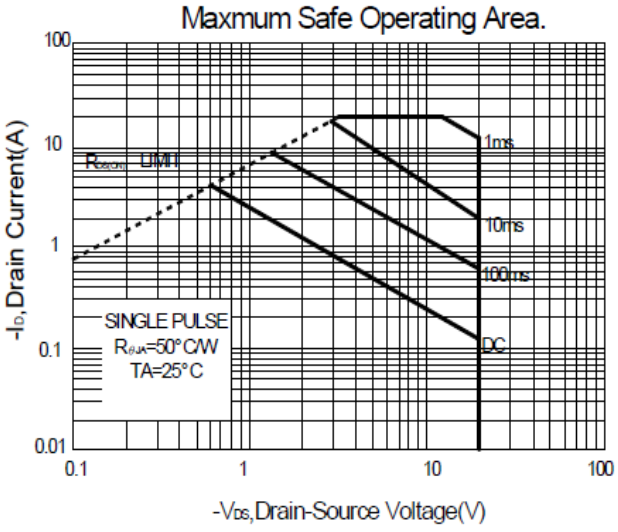

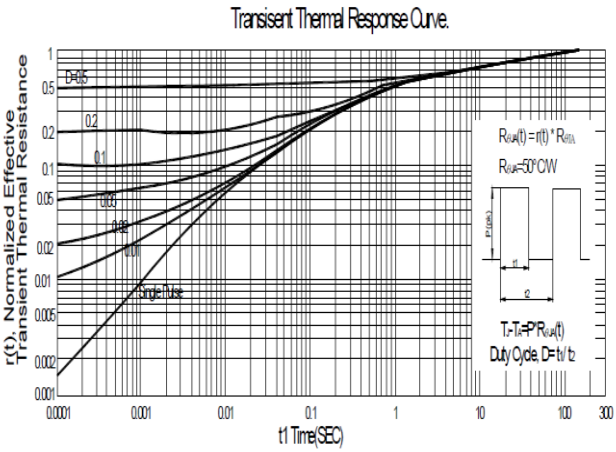

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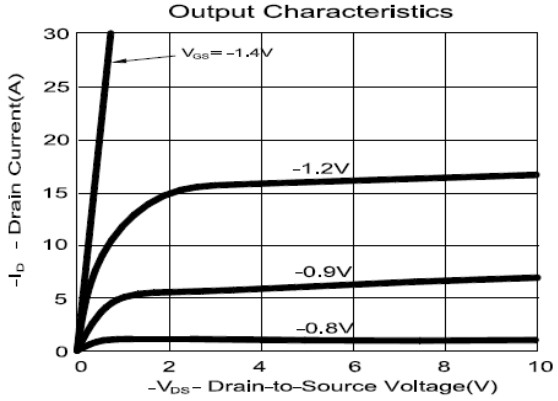
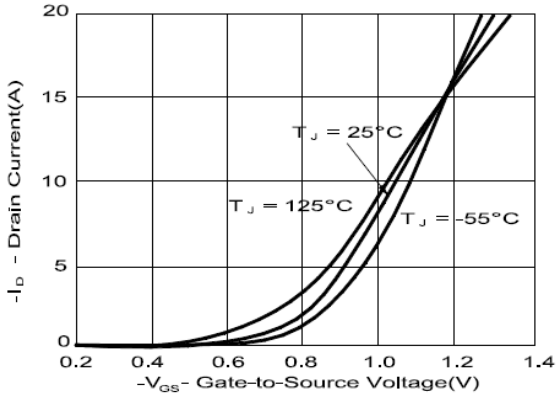
P-CHANNEL

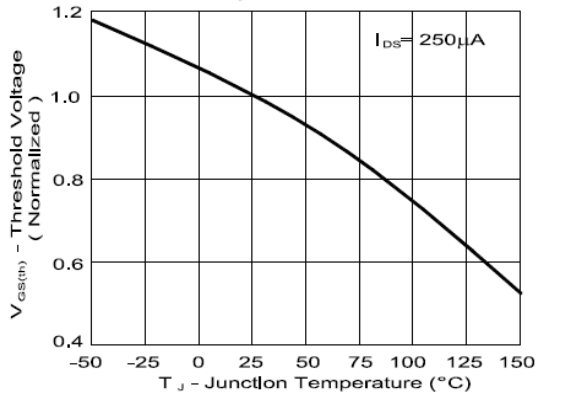
Output Characteristics



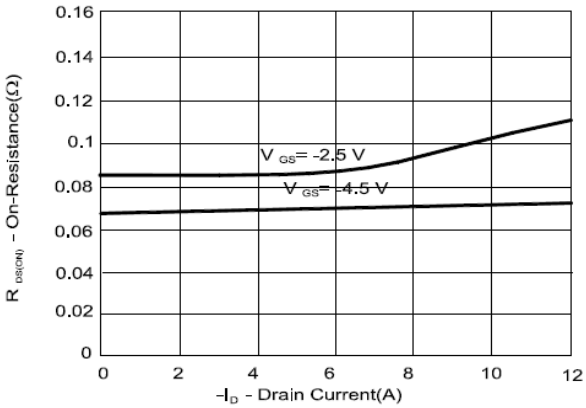
Transfer Characteristics



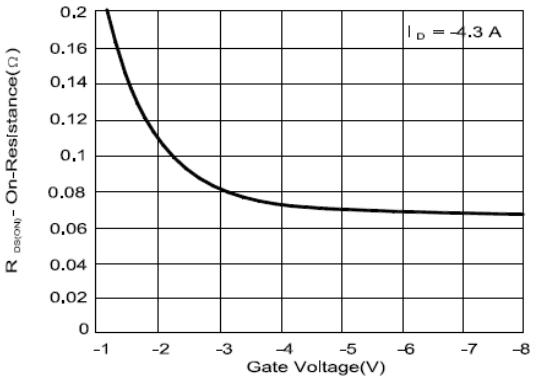
Threshold Voltage vs. Junction Temperature



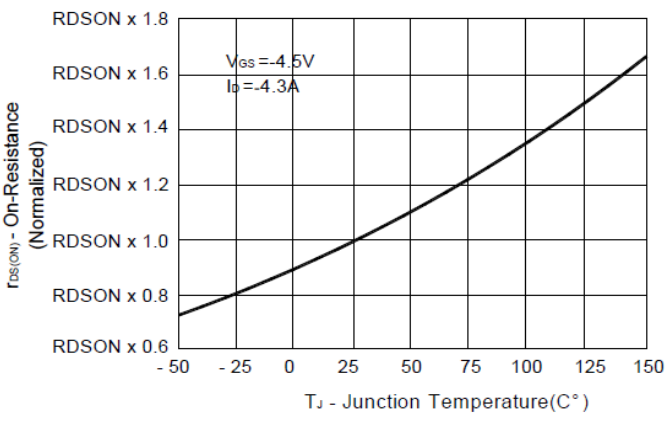
On-Resistance vs. Drain Current



On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature



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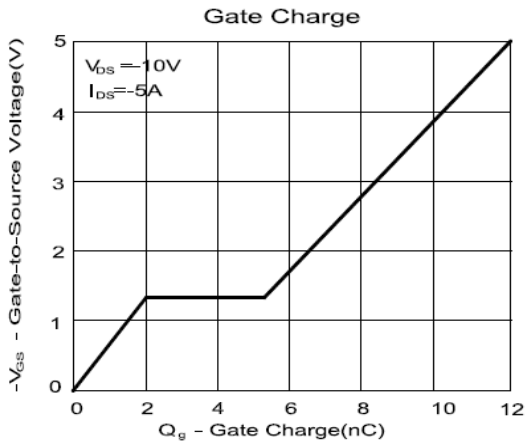

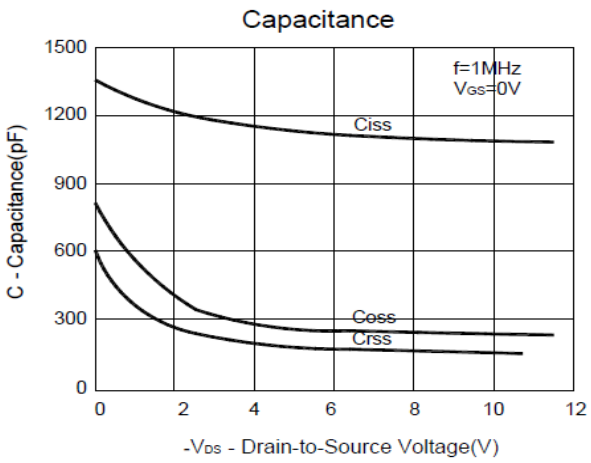

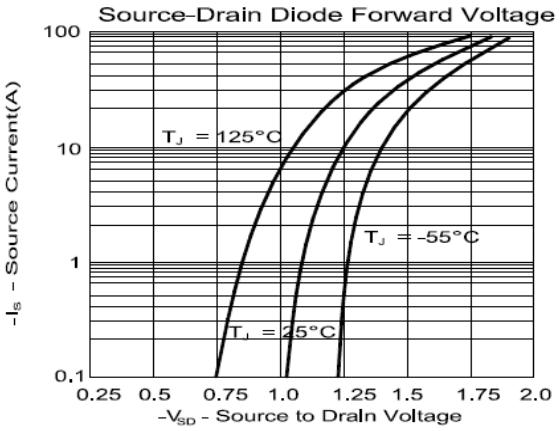

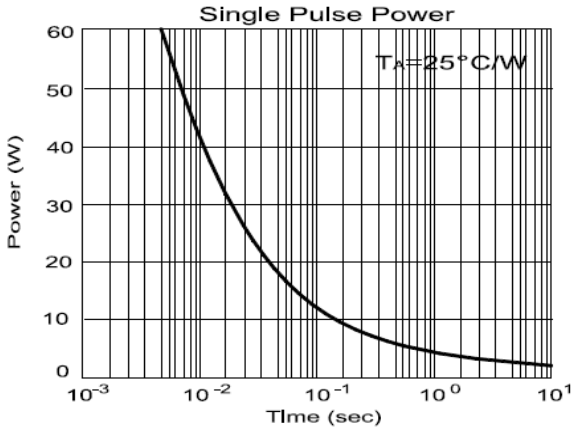

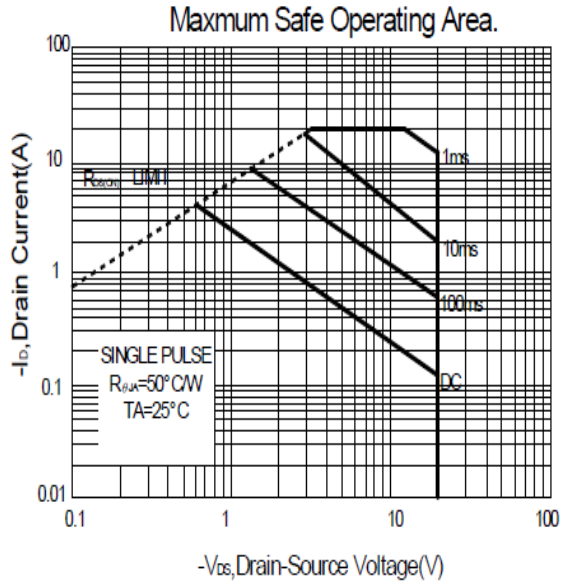

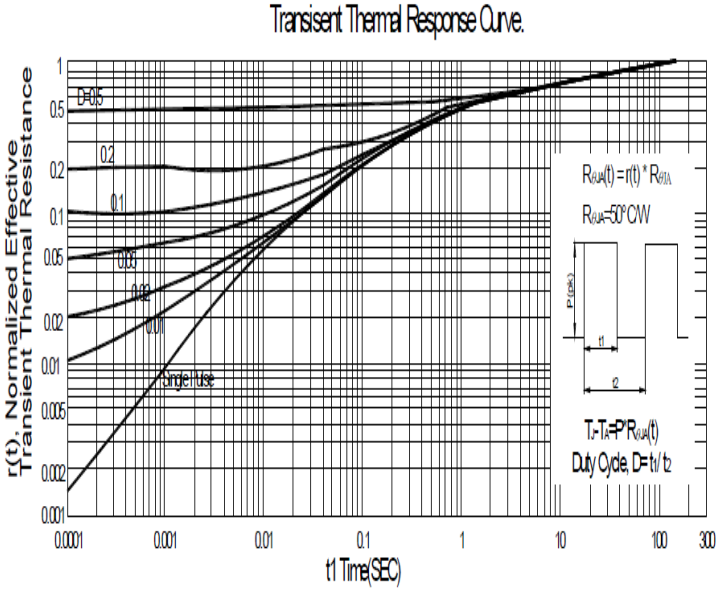

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Package Dimension

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