UNIKC Semiconductor

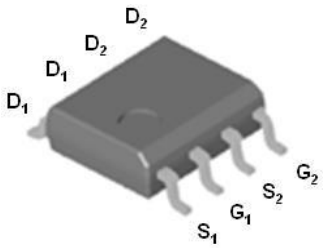
RoHS Compliant

P5506NVG

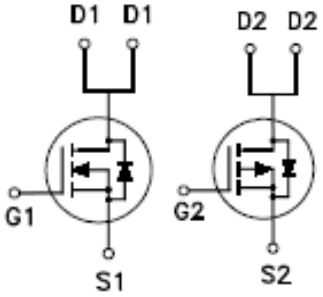
N- & P- Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	60	55mΩ @V_{GS} = 10V	4.5A
P-Channel	-60	80mΩ @V_{GS} = 10V	-3.5A



SOP-8



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

PARAMETERS/TEST CONDITIONS		SYMBOL	N-Channel	P-Channe	UNITS
Drain-Source Voltage		V_{DS}	60	-60	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current	T_A = 25 °C	I_D	4.5	-3.5	A
	T_A = 70 °C		4	-3	
Pulsed Drain Current[1]		I_{DM}	20	-20	
Avalanche Current		I_{AS}	18	23	
Avalanche Energy	L =0.1mH	E_{AS}	16	26	mJ
Power Dissipation	T_A = 25 °C	P_D	2		W
	T_A = 70 °C		1.3		
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		62.5	°C / W

[1]Pulse width limited by maximum junction temperature.

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

PARAMETER	SYMBOL	TEST CONDITIONS		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNITS
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	N-Ch	60			V
		V_{GS} = 0V, I_D = -250μA	P-Ch	-60			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N-Ch	1	1.5	2.5	
		V_{DS} = V_{GS}, I_D = -250μA	P-Ch	-1	-1.5	-2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	N-Ch			±100	nA
		V_{DS} = 0V, V_{GS} = ±20V	P-Ch			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =48V, V_{GS} = 0V	N-Ch			1	μA
		V_{DS} = -48V, V_{GS} = 0V	P-Ch			-1	
		V_{DS} = 40V, V_{GS} = 0V, T_J = 55 °C	N-Ch			10	
		V_{DS} =- 40V, V_{GS} = 0V, T_J = 55 °C	P-Ch			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	N-Ch	20			A
		V_{DS} =-5V, V_{GS} = -10V	P-Ch	-20			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 4A	N-Ch		55	75	mΩ
		V_{GS} = -4.5V, I_D = -3A	P-Ch		74	100	
		V_{GS} = 10V, I_D = 4.5A	N-Ch		42	55	
		V_{GS} = -10V, I_D = -3.5A	P-Ch		60	80	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 4.5A	N-Ch		14		S
		V_{DS} = -5V, I_D = -3.5A	P-Ch		9		
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 25V, f = 1MHz P-Channel V_{GS} = 0V, V_{DS} = -30V, f = 1MHz	N-Ch		650		pF
			P-Ch		760		
Output Capacitance	C_{oss}		N-Ch		80		
			P-Ch		90		
Reverse Transfer Capacitance	C_{rss}		N-Ch		35		
			P-Ch		40		

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Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	N-Ch		2		Ω
			P-Ch		5.6		
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 4.5A P-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -3.5A	N-Ch		12.5	18	nC
			P-Ch		15	21	
Gate-Source Charge[2]	Q_{gs}		N-Ch		2.4		
			P-Ch		2.5		
Gate-Drain Charge[2]	Q_{gd}		N-Ch		2.6		
			P-Ch		3		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 30V ID ≅ 1A, V_{GS} = 10V, R_{GEN} = 6Ω P-Channel V_{DS} = -30V, ID≅ -1A, V_{GS} = -10V, R_{GEN} = 6Ω	N-Ch		11	22	nS
			P-Ch		7	14	
Rise Time[2]	t_r		N-Ch		8	18	
			P-Ch		10	20	
Turn-Off Delay Time[2]	$t_{d(off)}$		N-Ch		19	35	
			P-Ch		19	34	
Fall Time[2]	t_f		N-Ch		6	15	
			P-Ch		12	22	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N-Ch			1.3	A
			P-Ch			-1.3	
Forward Voltage[1]	V_{SD}	I_F = 4.5A, V_{GS} = 0V	N-Ch			1	V
		I_F = -3.5A, V_{GS} = 0V	P-Ch			-1	
Reverse Recovery Time	t_{rr}	I_F = 4.6A, dI_F/dt = 100A / μS	N-Ch		18.7		nS
		I_F = -3.5A, dI_F/dt = 100A / μS	P-Ch		21.4		
Reverse Recovery Charge	Q_{rr}		N-Ch		12		nC
			P-Ch		17		

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

[2]Independent of operating temperature.

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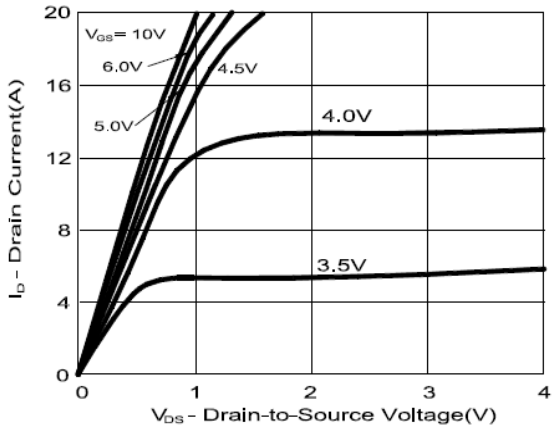
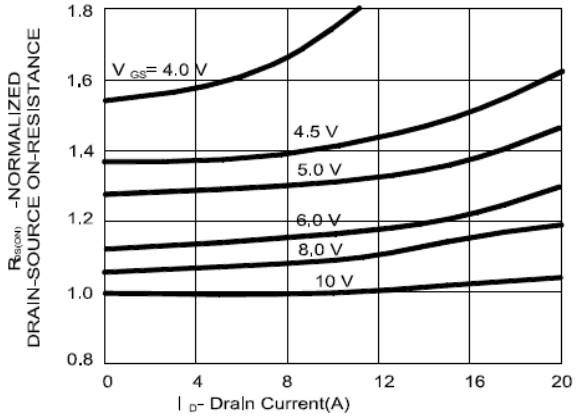
N-CHANNEL

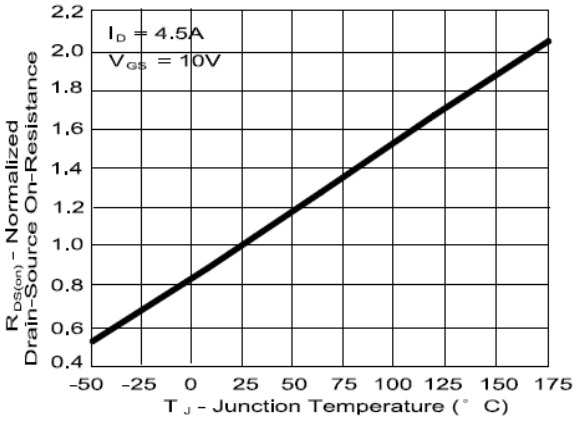
On-Region Characteristics



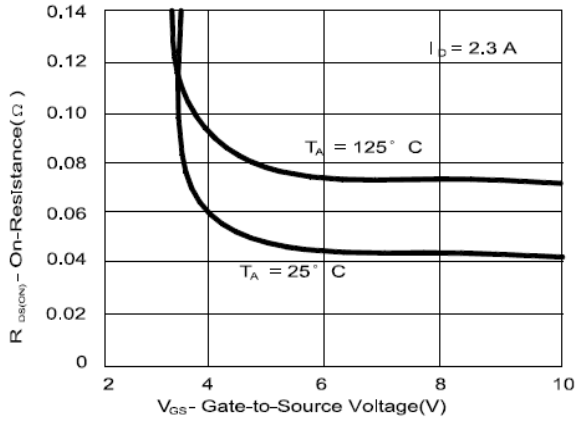
On-Resistance Variation with Drain Current and Gate Voltage



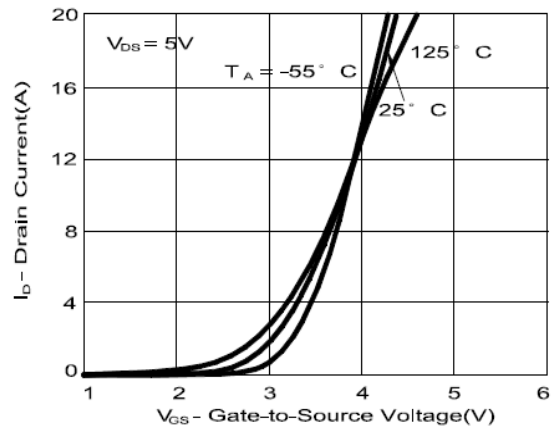
On-Resistance Variation with Temperature



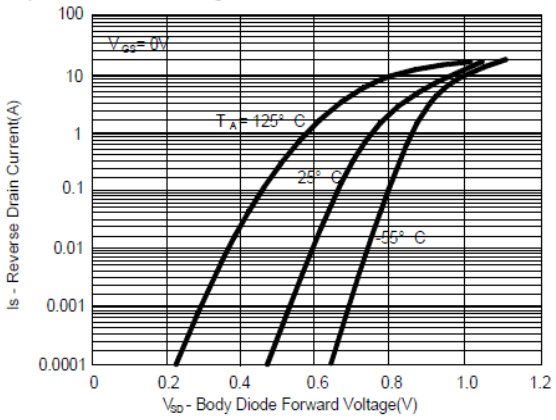
On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature



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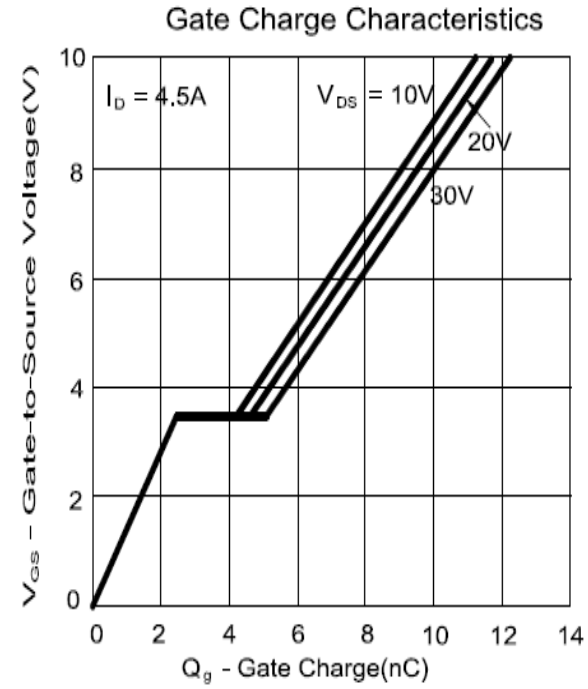

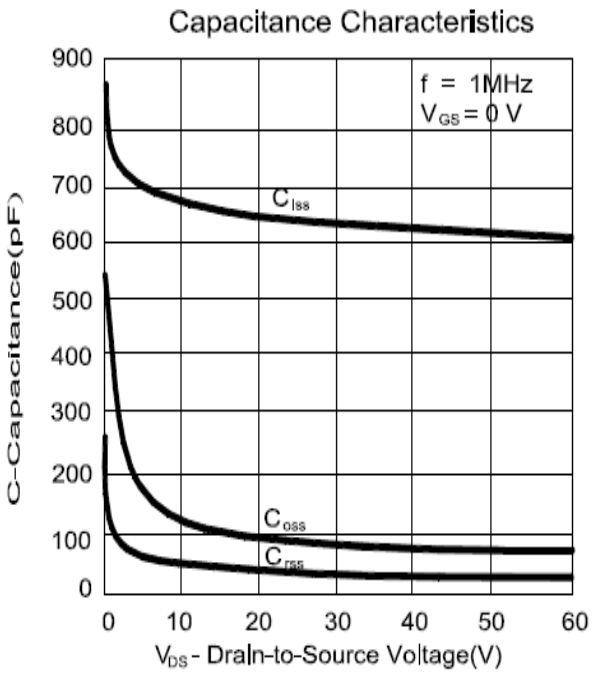

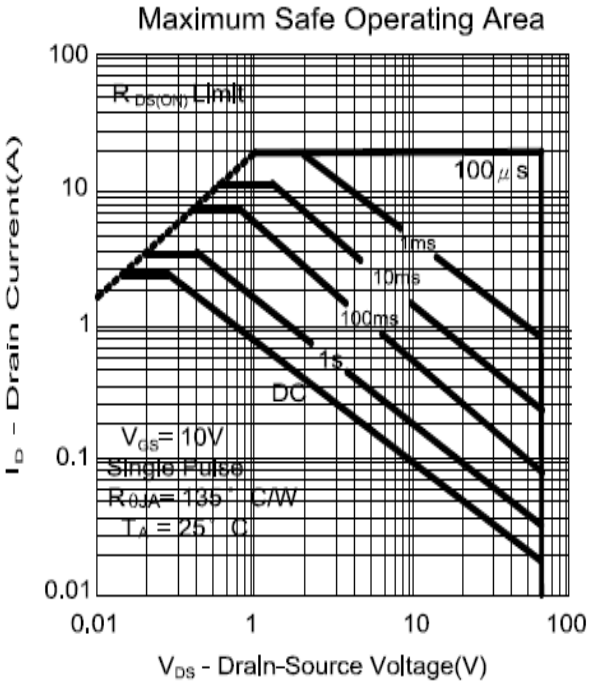

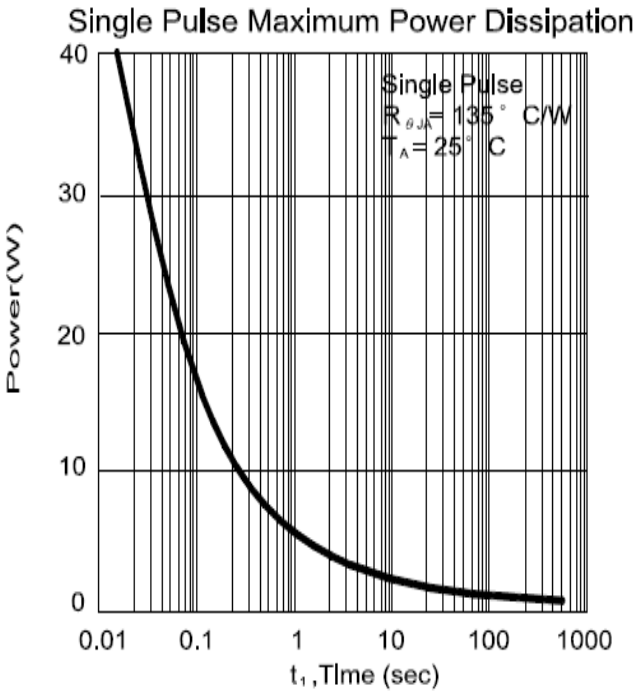

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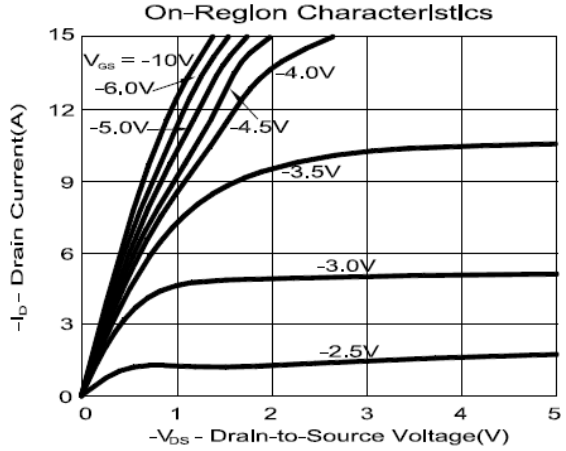
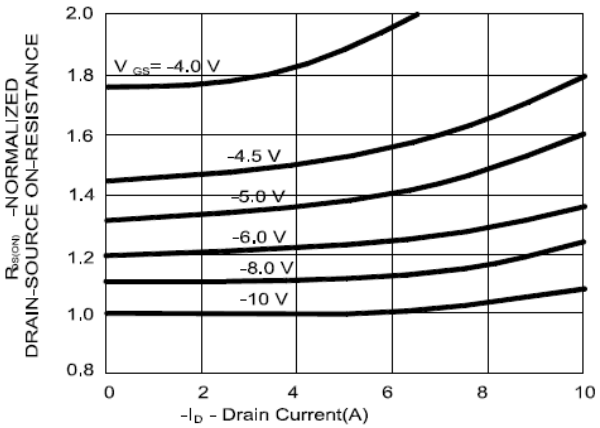
P-CHANNEL

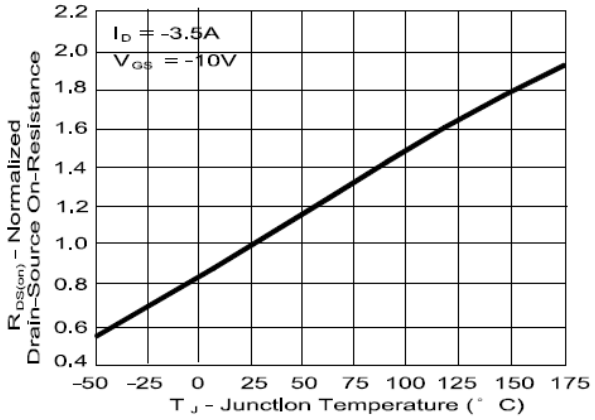
On-Region Characteristics



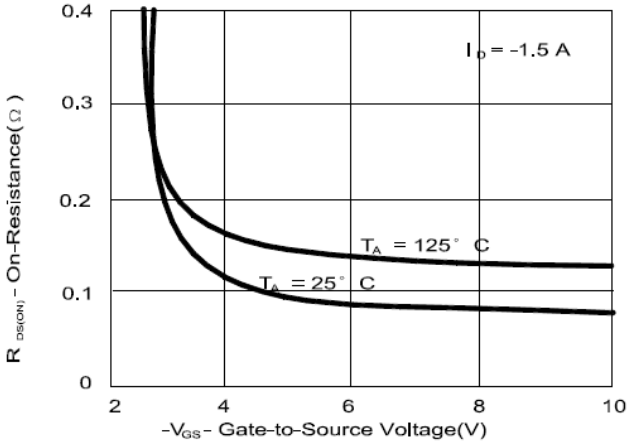
On-Resistance Variation with Drain Current and Gate Voltage



On-Resistance Variation with Temperature



On-Resistance Variation with Gate-to-Source Voltage



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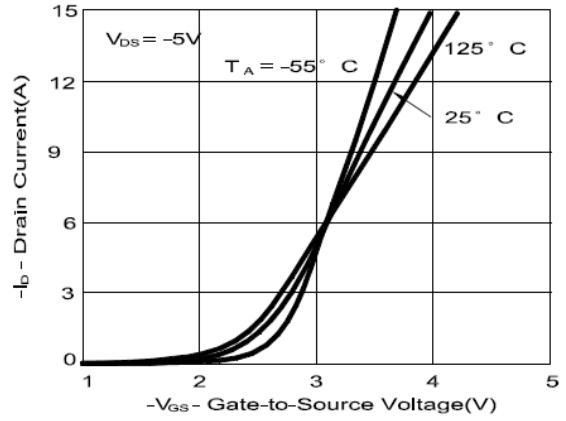
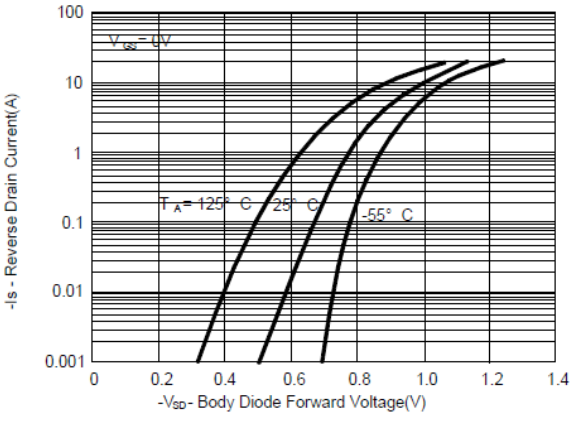


Body Diode Forward Voltage Variation with Source Current and Temperature



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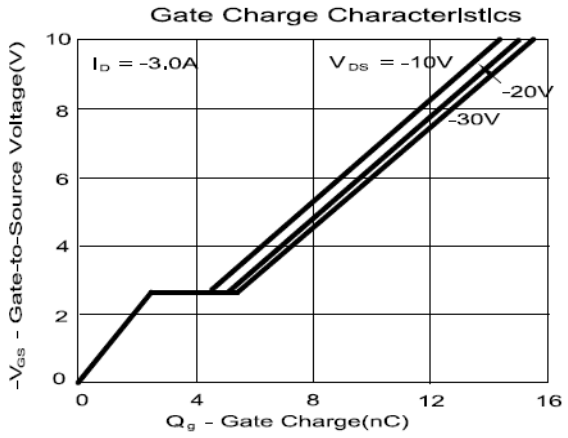

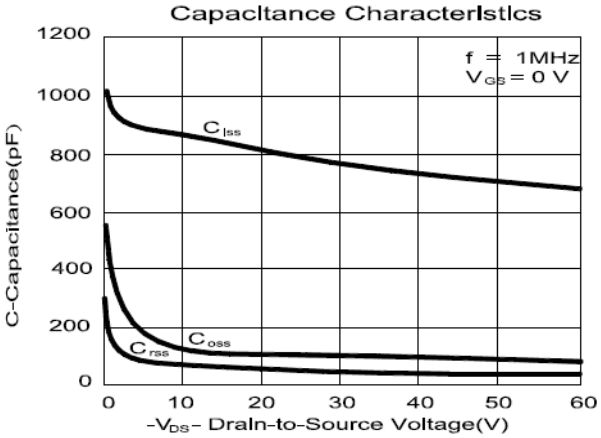

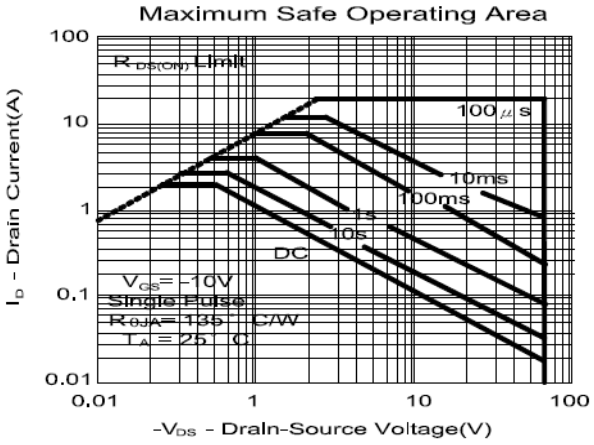

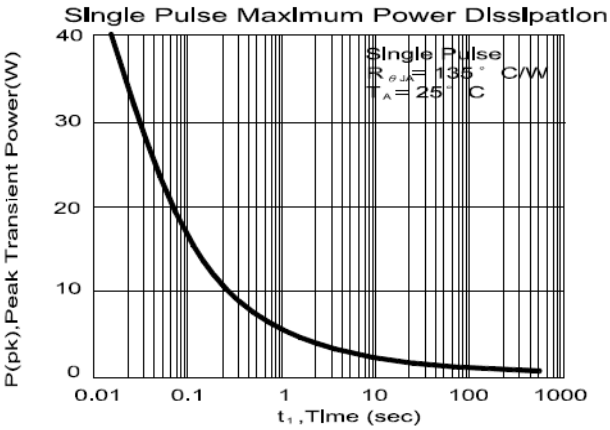

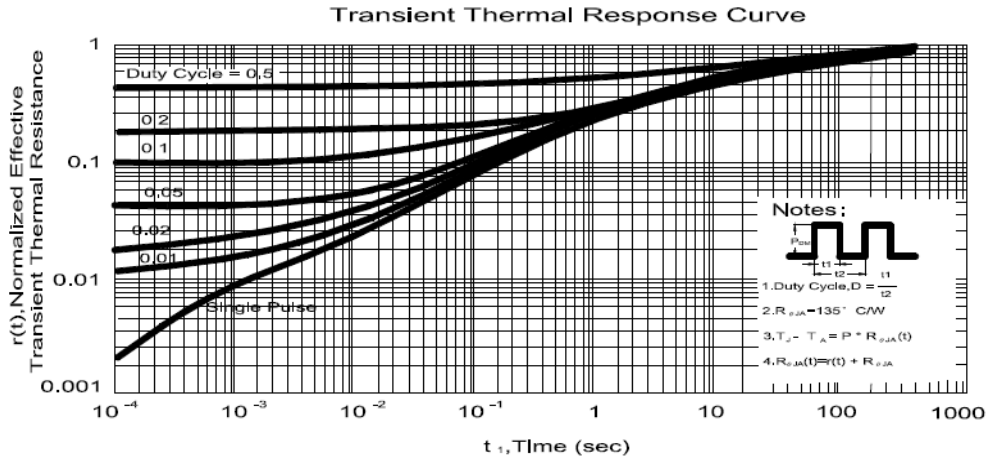

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Package Dimension

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