UNIKC
Semiconductor

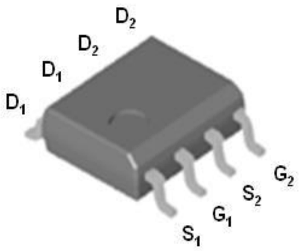
RoHS
Compliant

P5503QV

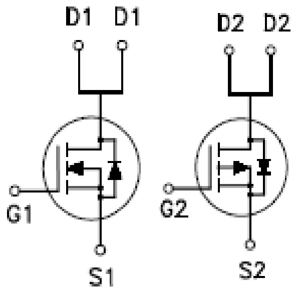
N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
30V	22mΩ @V_{GS} =10V	7.5A	N
-30V	60mΩ @V_{GS} = -10V	-4.5A	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	30	V
			P	-30	
Gate-Source Voltage		V_{GS}	N	±20	
			P	±20	
Continuous Drain Current	T_A = 25 °C	I_D	N	7.5	A
			P	-4.5	
	T_A = 70°C		N	6	
			P	-3.6	
Pulsed Drain Current[1]		I_{DM}	N	30	
			P	-20	
Avalanche Current		I_{AS}	N	22	
			P	-21	
Avalanche Energy	L = 0.1mH	E_{AS}	N	24	mJ
			P	22	
Power Dissipation	T_A = 25 °C	P_D	N	2	W
			P		
	T_A = 70 °C		N	1.28	
			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	$R_{\theta JA}$		62.5	°C / W
Junction-to-Case	$R_{\theta JC}$		35	

[1] Pulse width limited by maximum junction temperature.

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	1.7	2.2	3	
		V_{DS} = V_{GS}, I_D = -250μA	P	-1.7	-2.2	-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} = 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	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	N	30			A
		V_{DS} = -5V, V_{GS} = -10V	P	-20			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 4.5A	N		26	45	mΩ
		V_{GS} = -4.5V, I_D = -3.5A	P		72	100	
		V_{GS} = 10V, I_D = 5.5A	N		15	22	
		V_{GS} = -10V, I_D = -4.5A	P		40	60	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 5.5A	N		20		S
		V_{DS} = -10V, I_D = -4.5A	P		10		

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		554		pF
			P		722		
Output Capacitance	C_{oss}		N		146		
			P		137		
Reverse Transfer Capacitance	C_{rss}		N		84		
			P		92		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	N		2.1		Ω
			P		6.7		
Total Gate Charge[2]	$Q_g(V_{GS} = 10V)$	N-Channel V_{DS} = 0.5$V_{(BR)DSS}$, I_D = 5.5V, P-Channel V_{DS} = 0.5$V_{(BR)DSS}$, I_D = -4.5A	N		11		nC
			P		13.5		
	$Q_g(V_{GS} = 4.5V)$		N		5		
			P		6		
Gate-Source Charge[2]	Q_{gs}		N		2.3		
			P		3		
Gate-Drain Charge[2]	Q_{gd}		N		2.2		
			P		2.4		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 15V $I_D \cong$ 5.5A, V_{GS} = 10V, R_{GEN} = 6Ω P-Channel V_{DS} = -15V,R_L = 1Ω $I_D \cong$ -4.5A, V_{GS} = -10V, R_{GEN} = 6 Ω	N		10		nS
			P		12		
Rise Time[2]	t_r		N		10		
			P		12		
Turn-Off Delay Time[2]	$t_{d(off)}$		N		22		
			P		30		
Fall Time[2]	t_f		N		10		
			P		14		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N			7.5	A
			P			-4.5	
Forward Voltage[1]	V_{SD}	I_F = 5.5A, V_{GS} = 0V	N			1	V
		I_F = -4.5A, V_{GS} = 0V	P			-1	
Reverse Recovery Time	t_{rr}	N-Channel I_F = 5.5A, dI_F/dt = 100A / µS P-Channel I_F = -4.5A, dI_F/dt = 100A / µS	N		30		nS
			P		36		
Reverse Recovery Charge	Q_{rr}		N		19		nC
			P		21		

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

[2] Independent of operating temperature.

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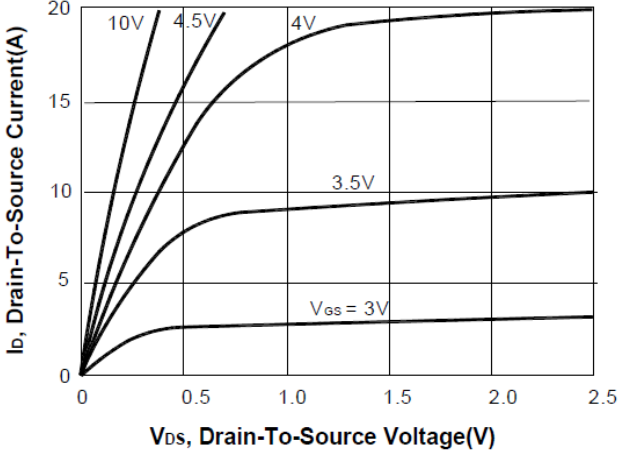
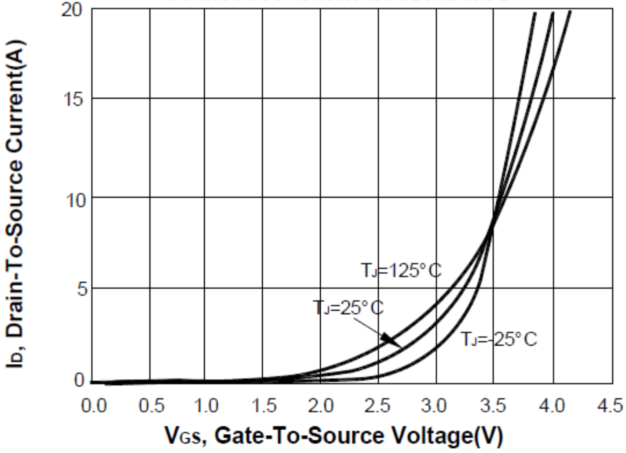
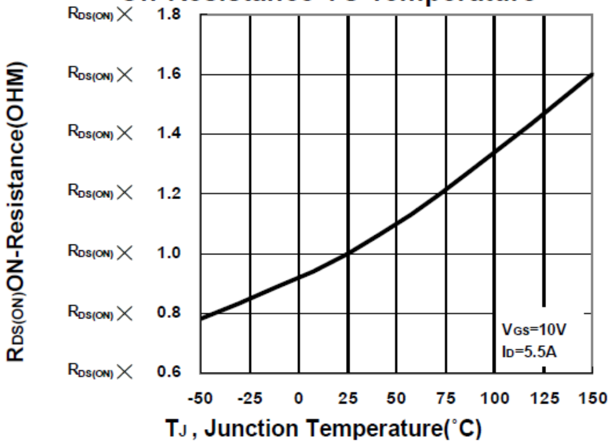
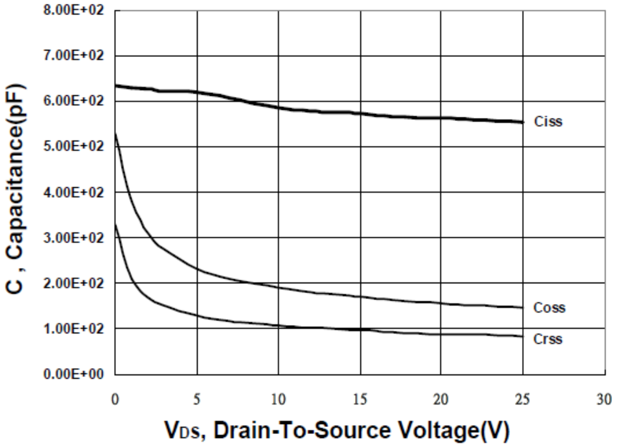
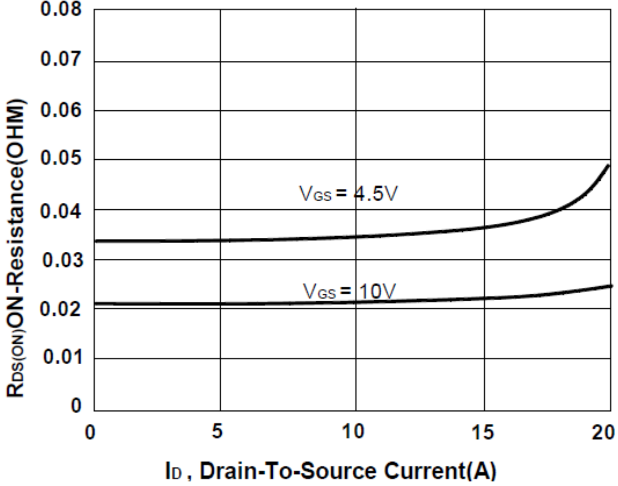
N-CHANNEL

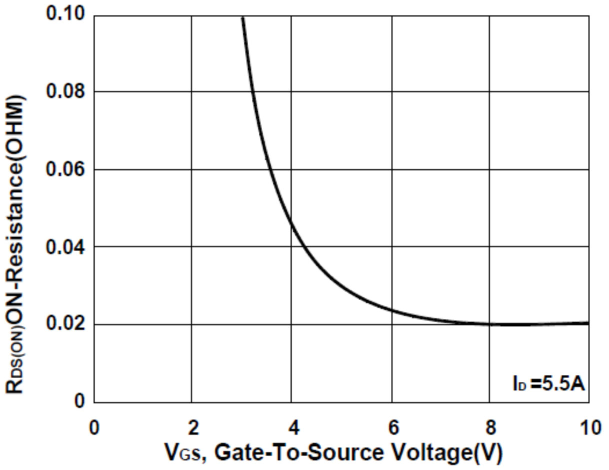

Output Characteristics


Transfer Characteristics

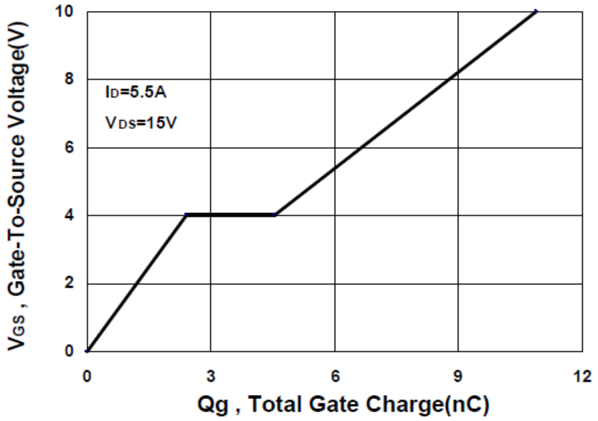

On-Resistance VS Temperature


Capacitance Characteristic

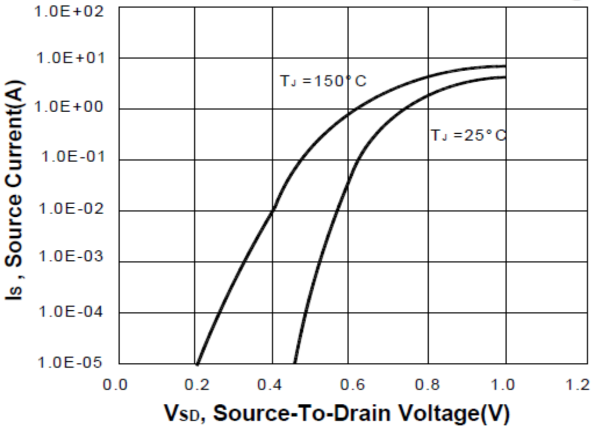

On-Resistance VS Drain Current


On-Resistance VS Gate-To-Source

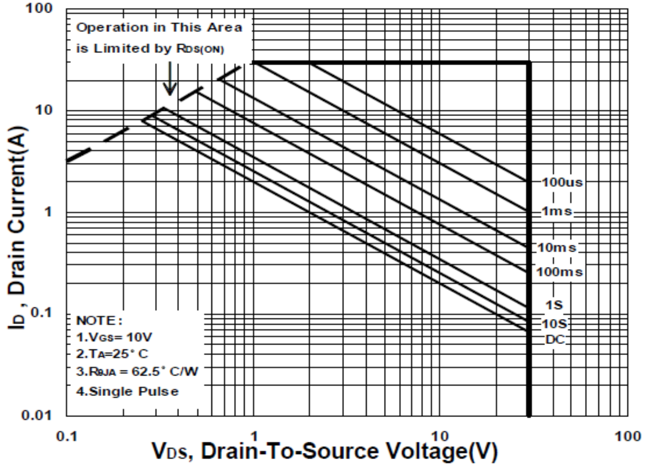
Gate charge Characteristics



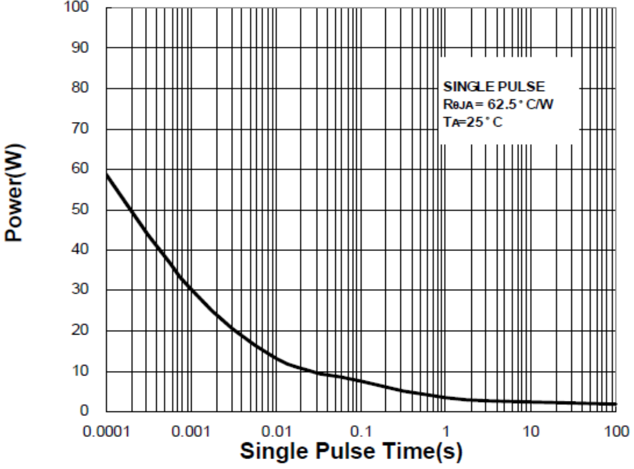
Source-Drain Diode Forward Voltage



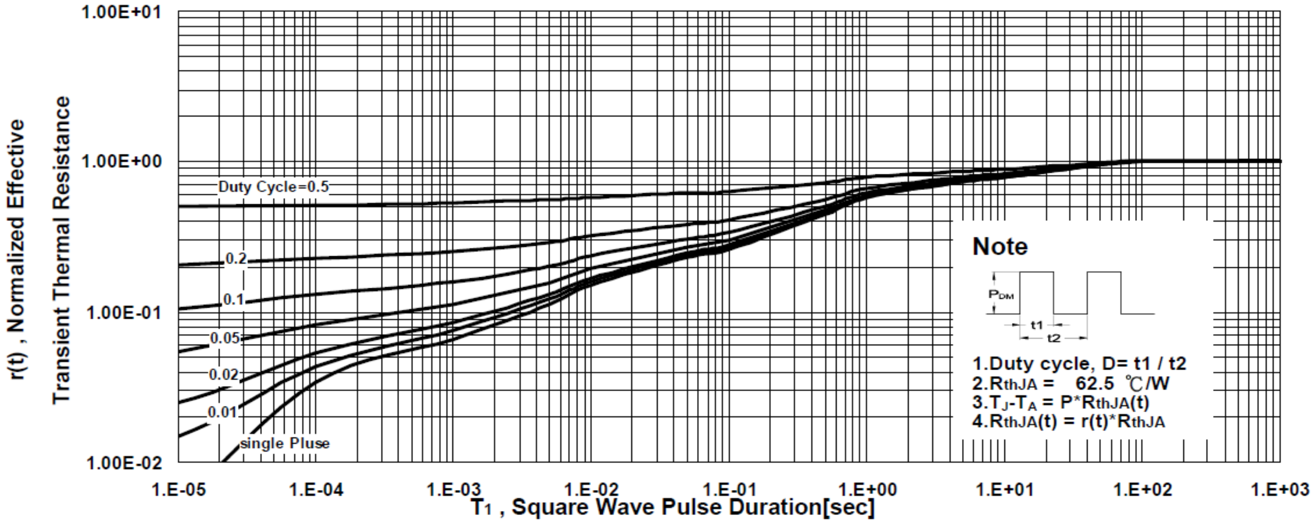
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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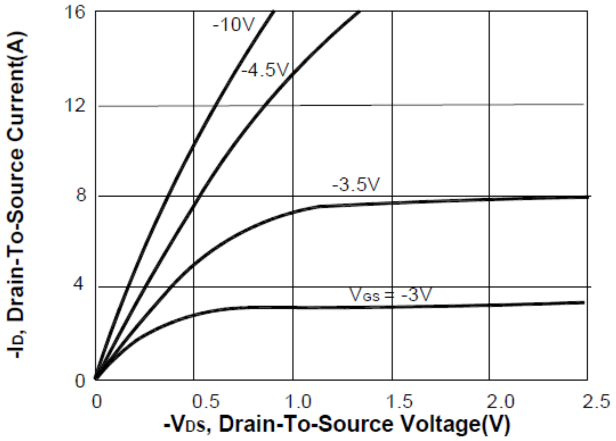
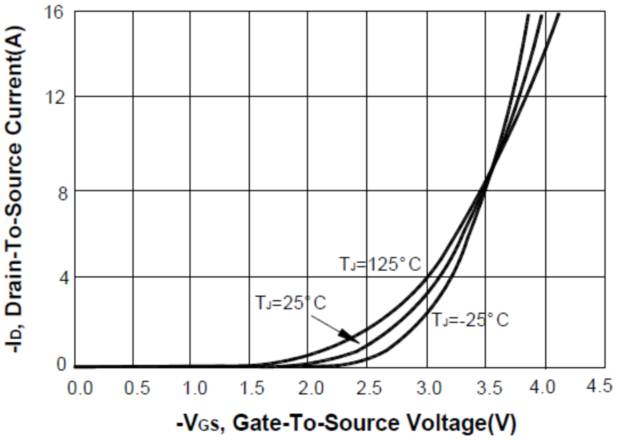
P-CHANNEL

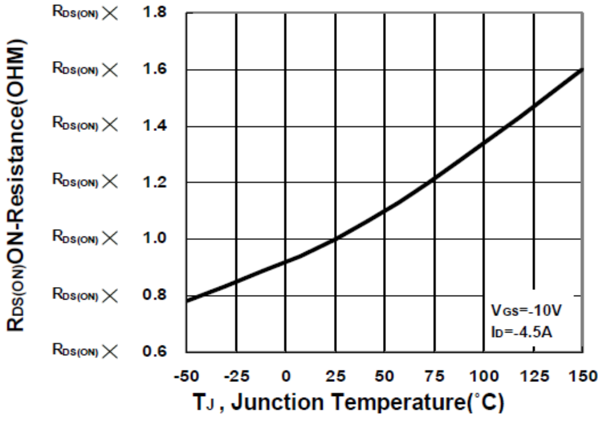
Output Characteristics



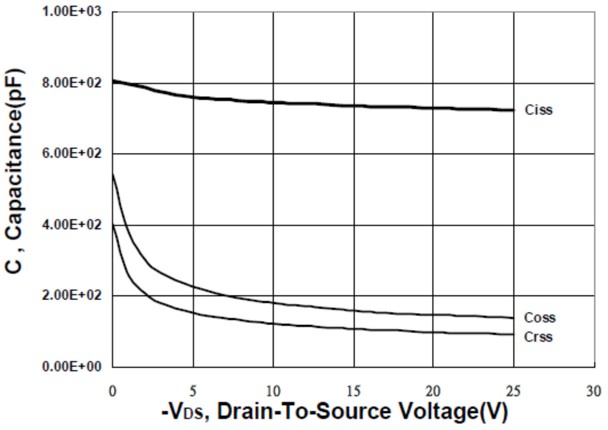
Transfer Characteristics



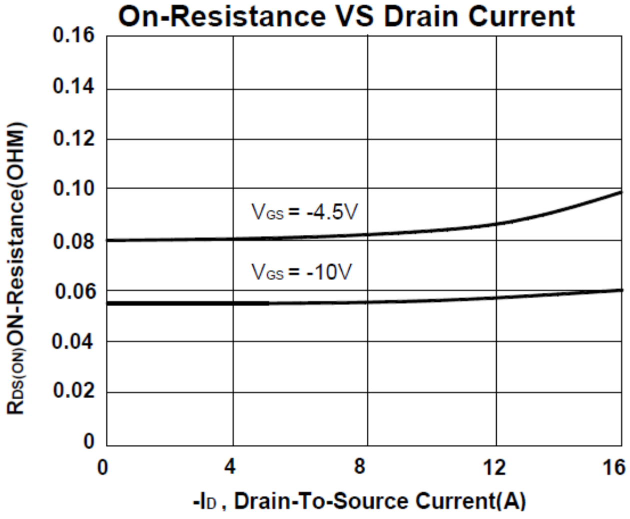
On-Resistance VS Temperature



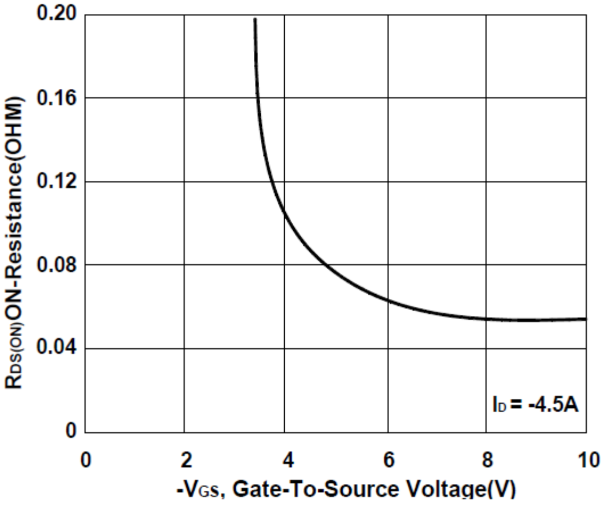
Capacitance Characteristic



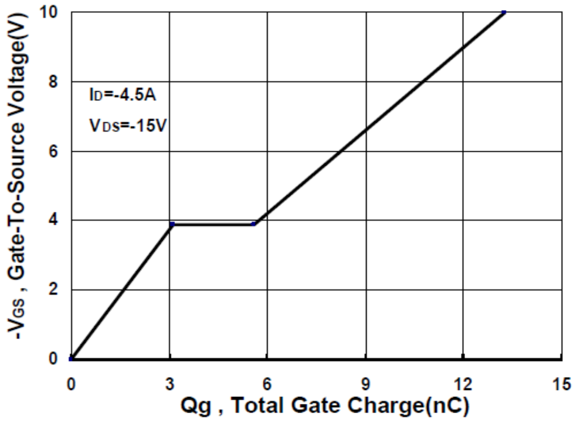
On-Resistance VS Drain Current



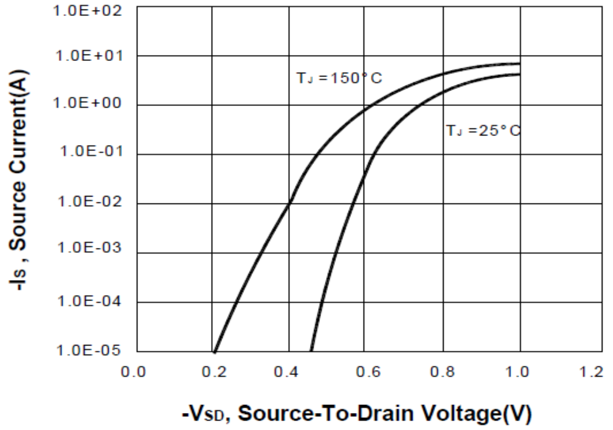
On-Resistance VS Gate-To-Source



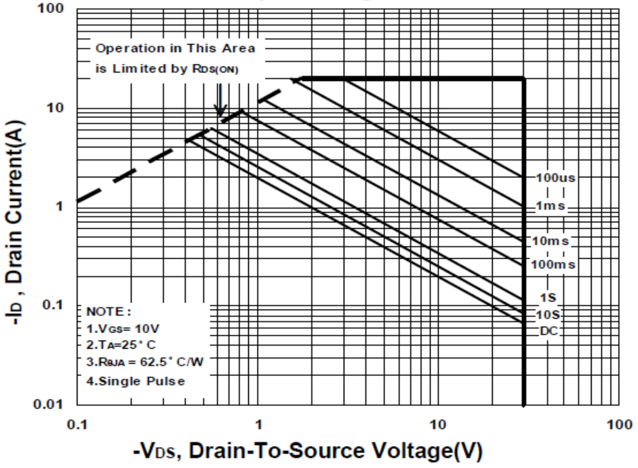
Gate charge Characteristics



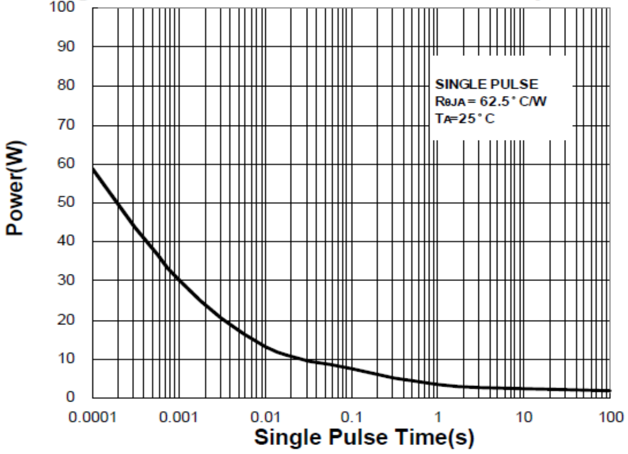
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



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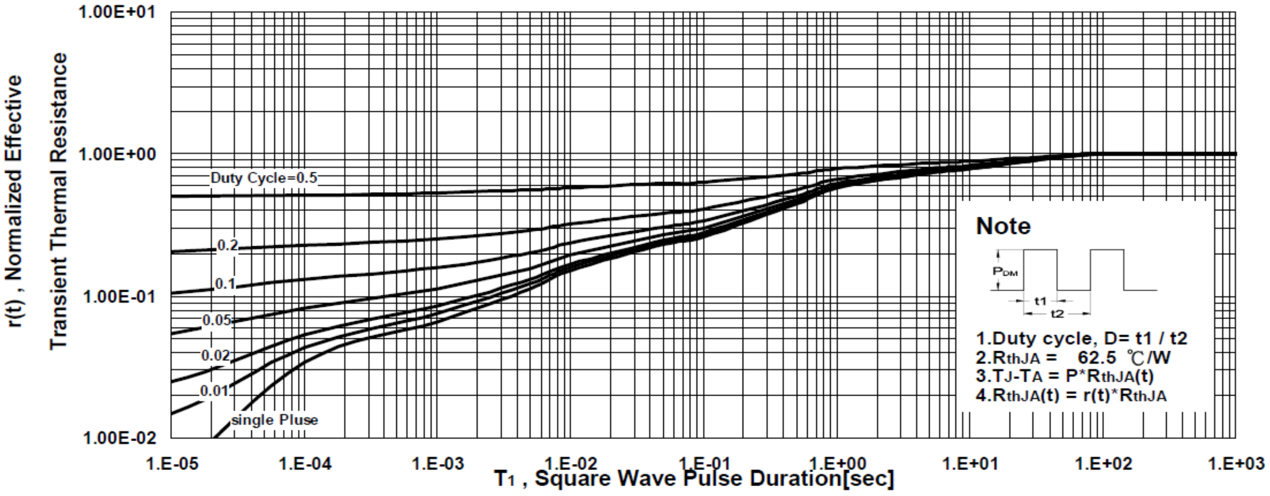

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Package Dimension

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