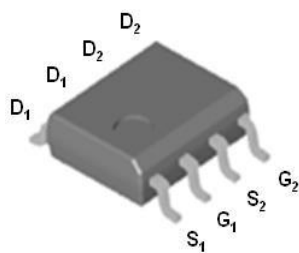


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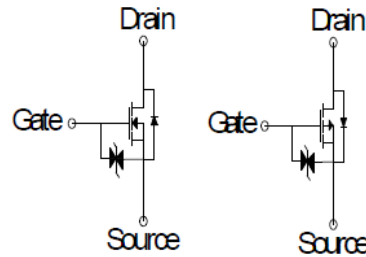
N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
40V	28m Ω @ $V_{GS} = 10V$	7A	N
-40V	42m Ω @ $V_{GS} = -10V$	-7A	P



SOP-8



ESD Protected Gate

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$ 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	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	N	7	A
			P	-7	
	$T_A = 70^{\circ}\text{C}$		N	5.5	
			P	-4.5	
Pulsed Drain Current ¹		I_{DM}	N	28	
			P	-24	
Avalanche Current		I_{AS}	N	28	
			P		
Avalanche Energy	L = 0.1mH	E_{AS}	N	39	mJ
			P		
Power Dissipation	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	N	2	W
			P		
	$T_A = 70\text{ }^{\circ}\text{C}$		N	1.3	
			P		
Junction & Storage Temperature Range		T_j, T_{stg}		-55 to 150	$^{\circ}\text{C}$

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N&P-Channel Enhancement Mode MOSFET

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$	48	62.5	°C / W

¹ Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ °C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	CH.	LIMITS			UNITS
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	N	40			V
		$V_{GS} = 0V, I_D = -250\mu A$	P	-40			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	N	1.0	1.8	3	
		$V_{DS} = V_{GS}, I_D = -250\mu A$	P	-1.0	-1.8	-3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 16V$	N	± 1		± 30	μA
		$V_{DS} = 0V, V_{GS} = \pm 16V$	P	± 1		± 30	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 32V, V_{GS} = 0V$	N			1	
		$V_{DS} = -32V, V_{GS} = 0V$	P			-1	
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$	N			10	
		$V_{DS} = -30V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$	P			-10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	N	20			A
		$V_{DS} = -5V, V_{GS} = -10V$	P	-20			
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6A$	N		23	33	mΩ
		$V_{GS} = -4.5V, I_D = -5A$	P		41	60	
		$V_{GS} = 10V, I_D = 7A$	N		15	28	
		$V_{GS} = -10V, I_D = -7A$	P		26	42	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 7A$	N		19		S
		$V_{DS} = -10V, I_D = -7A$	P		18		

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N&P-Channel Enhancement Mode MOSFET

DYNAMIC							
Input Capacitance	C _{iss}	N-Channel V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	N		1010		pF
			P		1090		
Output Capacitance	C _{oss}		N		224		
			P		216		
Reverse Transfer Capacitance	C _{rss}	P-Channel V _{GS} = 0V, V _{DS} = -15V, f = 1MHz	N		123		
			P		123		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	N		2.6		Ω
			P		6.6		
Total Gate Charge ²	Q _g (V _{GS} = 10V)	N-Channel V _{DS} = 0.5V _{(BR)DSS} , I _D = 7A,	N		19		nC
			P		19		
	Q _g (V _{GS} = 4.5V)		N		10		
			P		11		
Gate-Source Charge ²	Q _{gs}	P-Channel V _{DS} = 0.5V _{(BR)DSS} , I _D = -7A	N		5		
			P		4		
Gate-Drain Charge ²	Q _{gd}		N		3		
			P		3		
Turn-On Delay Time ²	t _{d(on)}	N-Channel V _{DS} = 20V I _D ≅ 1A, V _{GS} = 10V, R _{GEN} = 6Ω	N		2.2		nS
			P		9.7		
Rise Time ²	t _r		N		7.5		
			P		14		
Turn-Off Delay Time ²	t _{d(off)}	P-Channel V _{DS} = -20V,	N		11.8		
			P		28.7		
Fall Time ²	t _f	I _D ≅ -1A, V _{GS} = -10V, R _{GEN} = 6Ω	N		3.7		
			P		17.8		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)							
Continuous Current	I _S		N			1.3	A
			P			-1.3	
Forward Voltage ¹	V _{SD}	I _F = 7A, V _{GS} = 0V	N			1	V
		I _F = -7A, V _{GS} = 0V	P			-1	

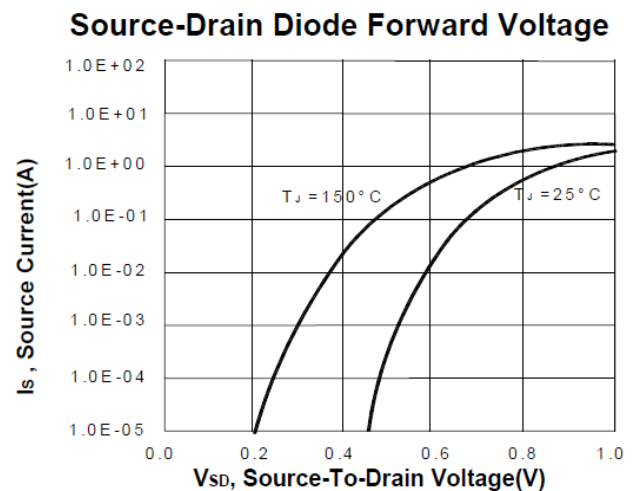
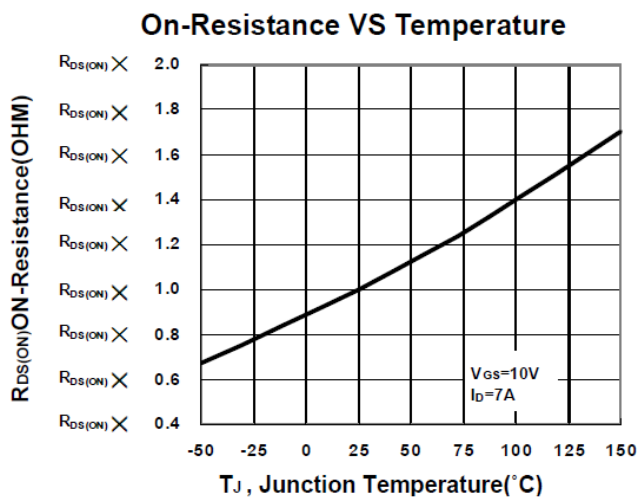
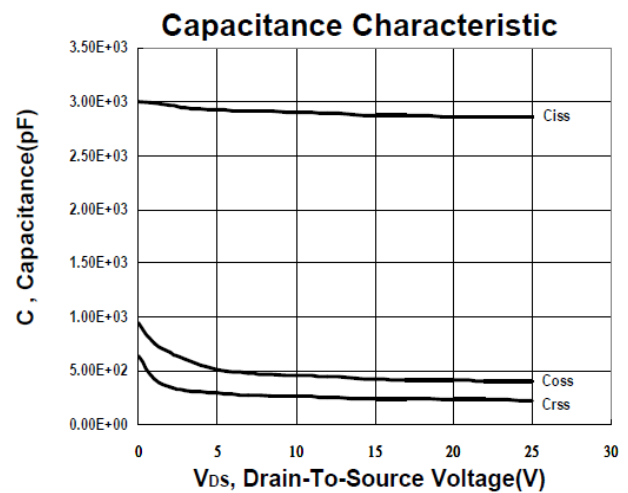
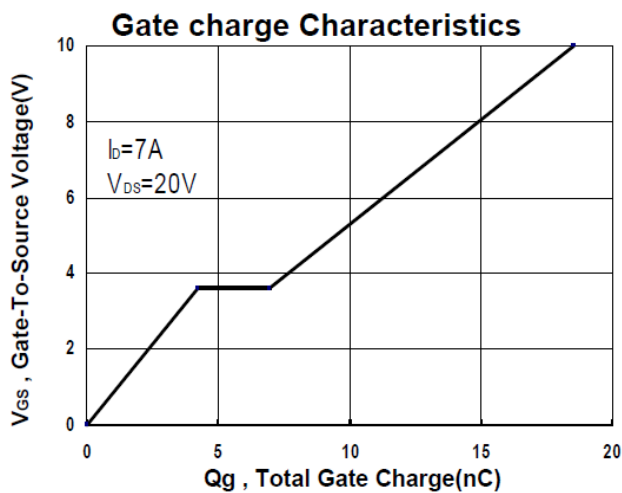
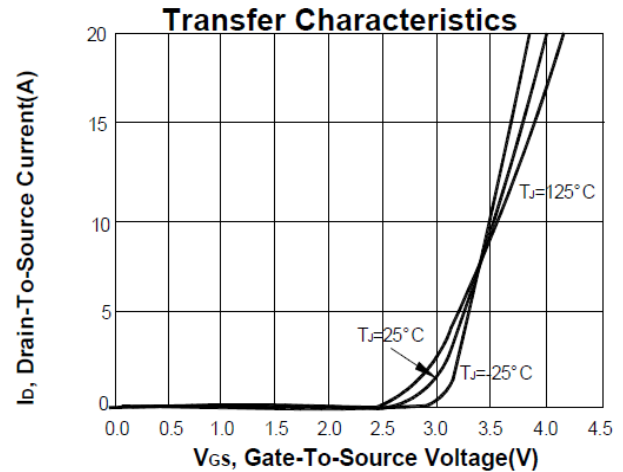
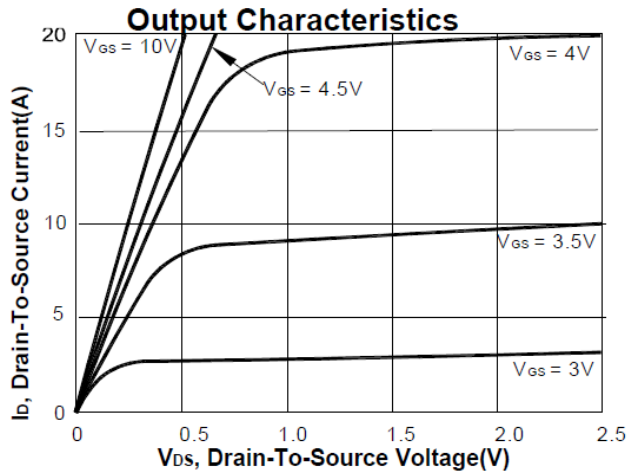
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

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N&P-Channel Enhancement Mode MOSFET

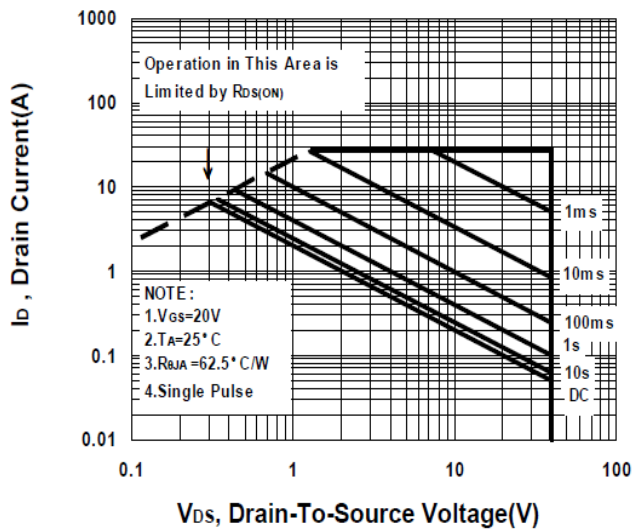
N-CHANNEL



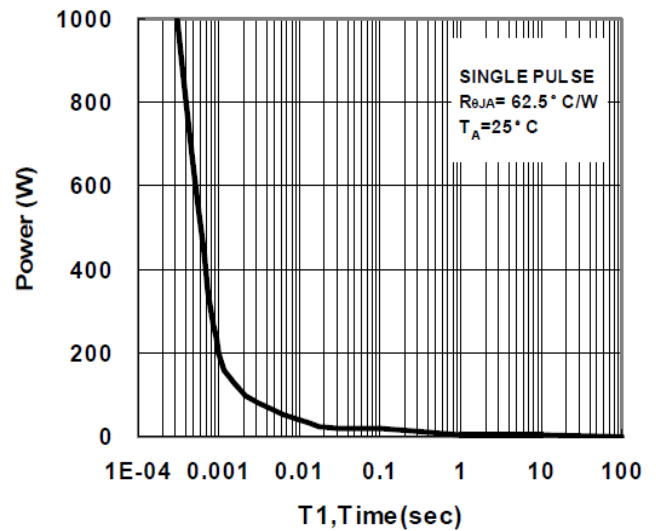
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N&P-Channel Enhancement Mode MOSFET

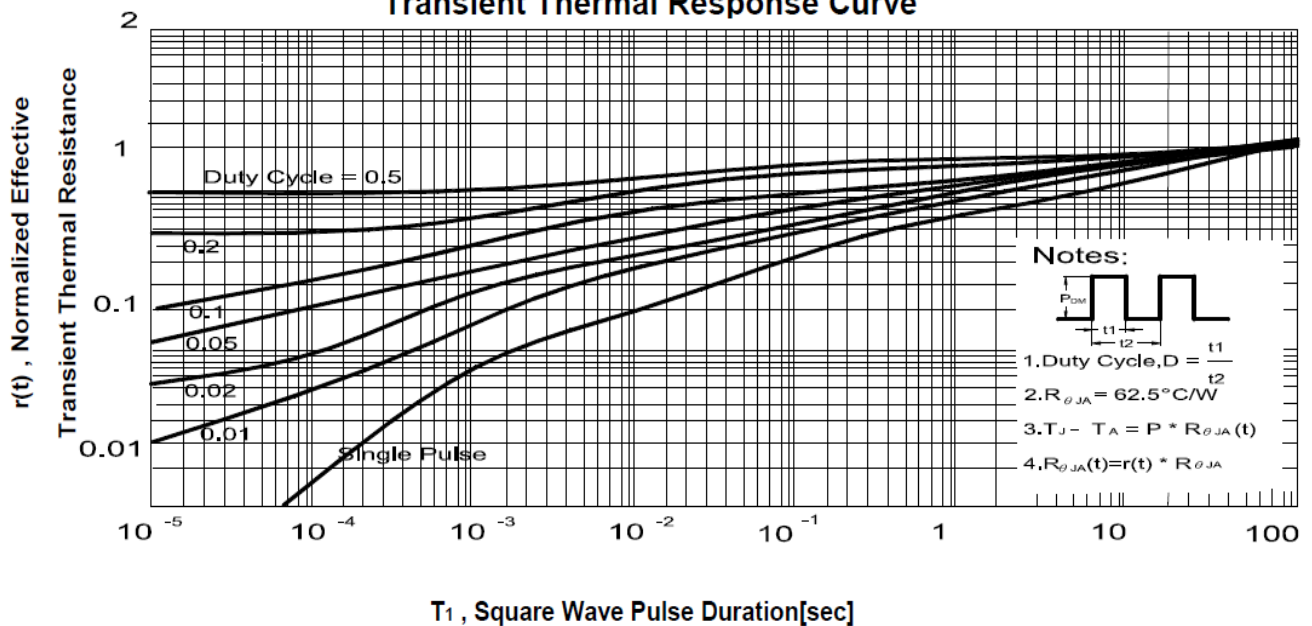
Safe Operating Area



Power Dissipation



Transient Thermal Response Curve

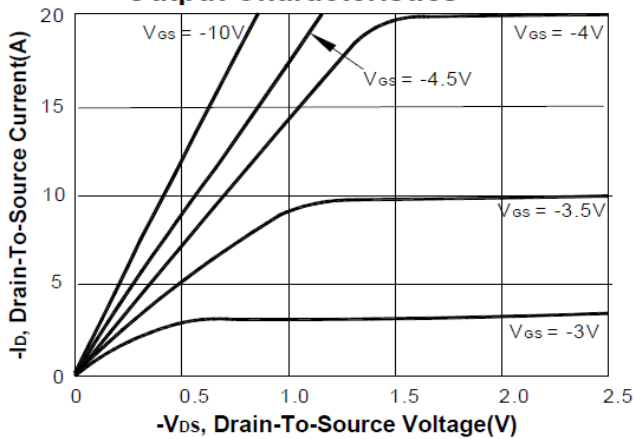


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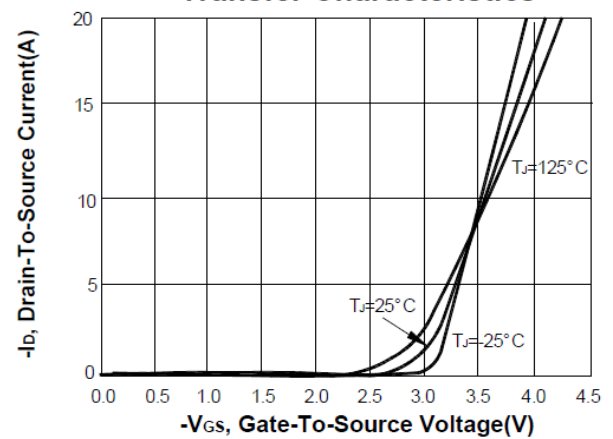
N&P-Channel Enhancement Mode MOSFET

P-CHANNEL

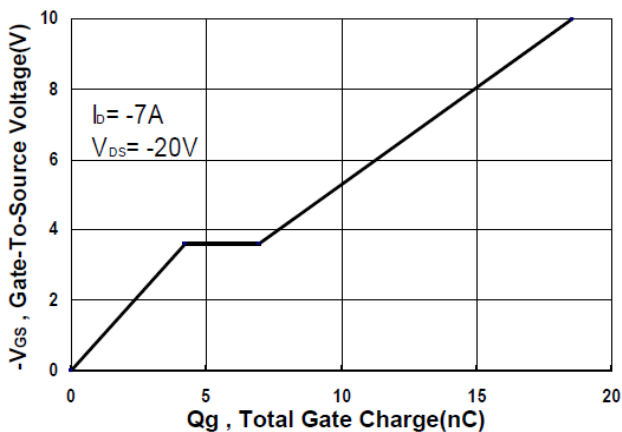
Output Characteristics



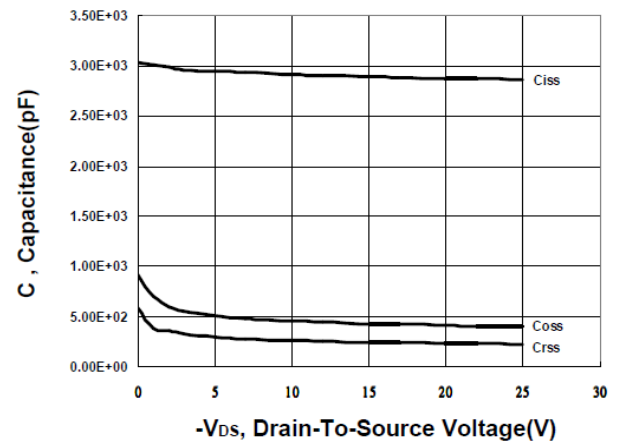
Transfer Characteristics



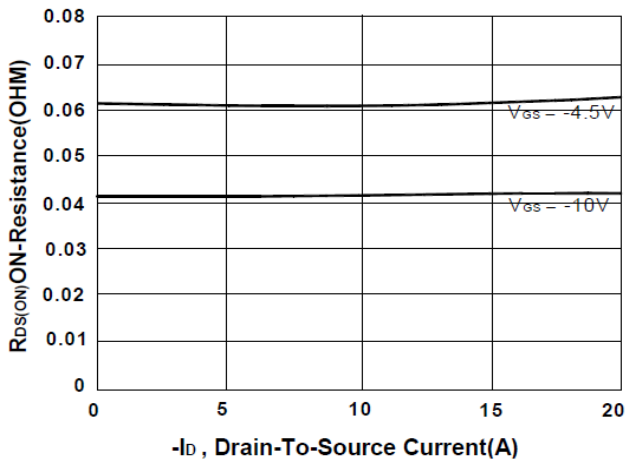
Gate charge Characteristics



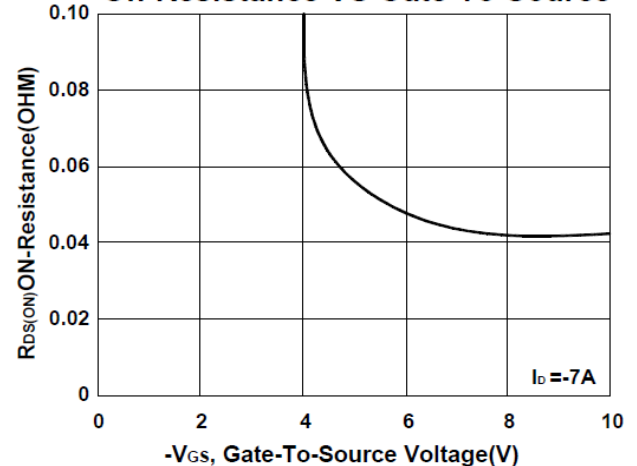
Capacitance Characteristic



On-Resistance VS Drain Current



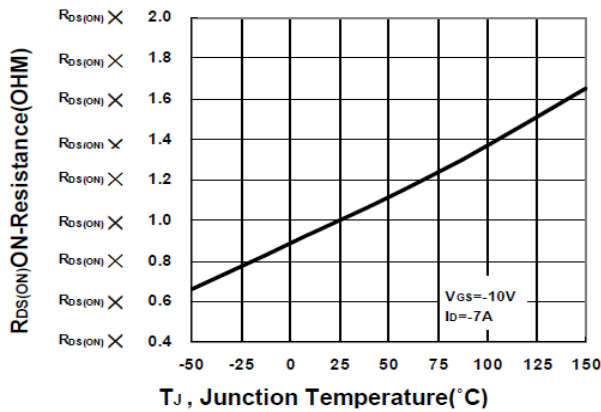
On-Resistance VS Gate-To-Source



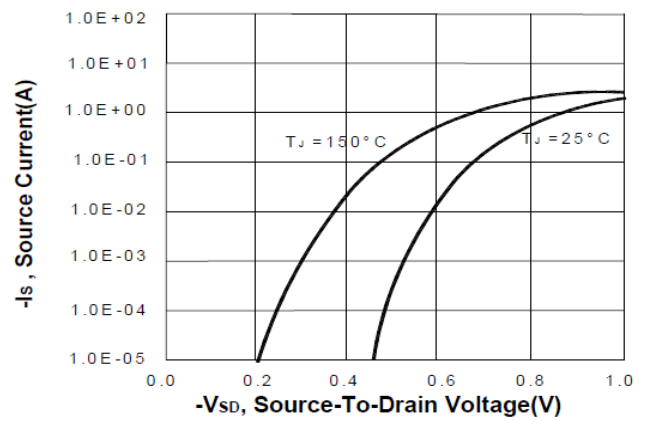
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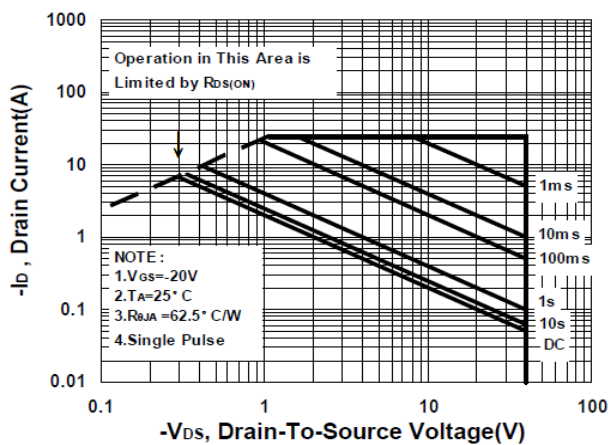
On-Resistance VS Temperature



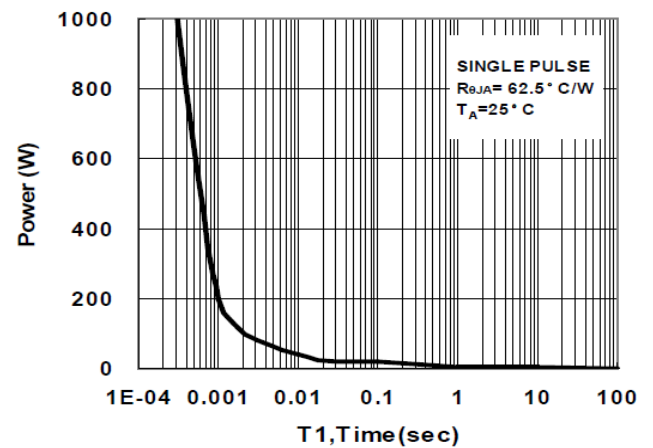
Source-Drain Diode Forward Voltage



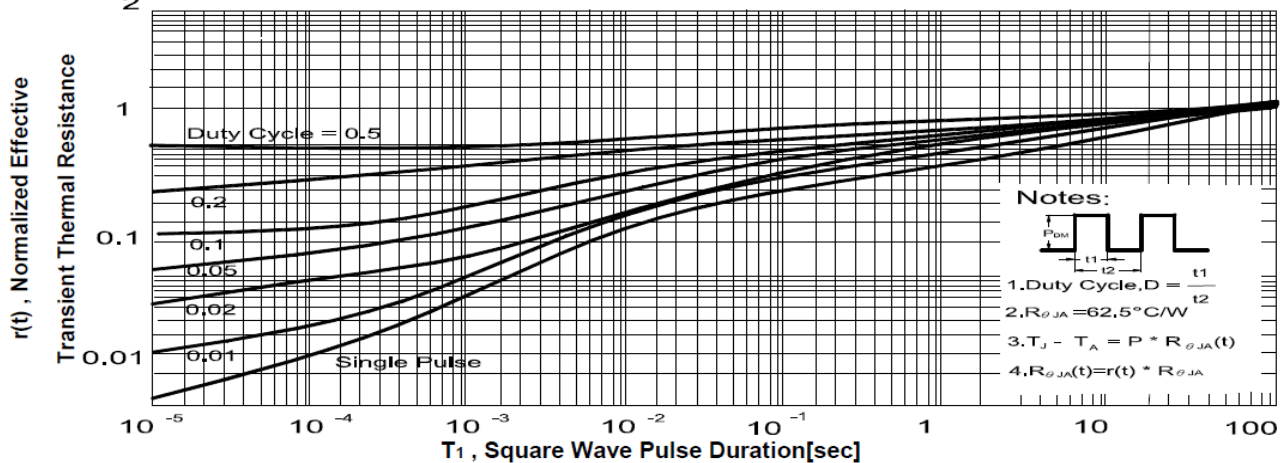
Safe Operating Area



Power Dissipation



Transient Thermal Response Curve



PZ3304QV

N&P-Channel Enhancement Mode MOSFET

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				

