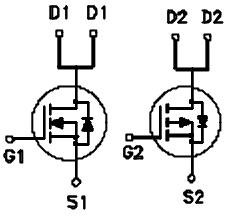
NIKO-SEM

N- & P-Channel Enhancement Mode Field Effect Transistor

P6503NJG
TSOPJW-8
Lead-Free

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	30	65mΩ	4A
P-Channel	-30	150mΩ	-3A



G : GATE
D : DRAIN
S : SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	N-Channel	P-Channel	UNITS
Drain-Source Voltage		V_{DS}	30	-30	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	4	-3	A
	T_C = 70 °C		3	-2	
Pulsed Drain Current[1]		I_{DM}	10	-10	
Power Dissipation	T_C = 25 °C	P_D	2		W
	T_C = 70 °C		1.3		
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	275		

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		110	°C / W

[1]Pulse width limited by maximum junction temperature.
[2]Duty cycle ≤ 1%

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

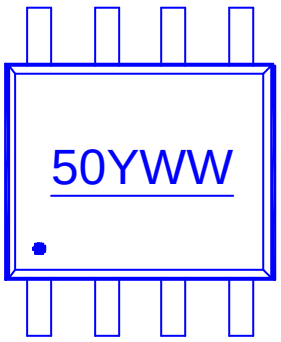
PARAMETER	SYMBOL	TEST CONDITIONS		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250µA	N-Ch	30			V
		V_{GS} = 0V, I_D = -250µA	P-Ch	-30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	N-Ch	0.9	1.5	2.5	
		V_{DS} = V_{GS}, I_D = -250µA	P-Ch	-0.9	-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} = 24V, V_{GS} = 0V	N-Ch			1	µA
		V_{DS} = -24V, V_{GS} = 0V	P-Ch			-1	
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55 °C	N-Ch			10	
		V_{DS} = -20V, 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	10			A
		V_{DS} =-5V, V_{GS} = -10V	P-Ch	-10			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 3A	N-Ch		72	120	mΩ
		V_{GS} = -4.5V, I_D = -2A	P-Ch		170	250	
		V_{GS} = 10V, I_D = 4A	N-Ch		48	65	
		V_{GS} = -10V, I_D = -3A	P-Ch		100	150	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 3A	N-Ch		6		S
		V_{DS} = -10V, I_D = -2A	P-Ch		3		
DYNAMIC							
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 3A P-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -2A	N-Ch		5	7.5	nC
			P-Ch		5.5	6.6	
Gate-Source Charge[2]	Q_{gs}		N-Ch		0.8		
			P-Ch		1.2		
Gate-Drain Charge[2]	Q_{gd}		N-Ch		1.0		
			P-Ch		0.9		

Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 15V, R_L = 15Ω $I_D \cong$ 1A, V_{GS} = 10V, R_{GEN} = 6Ω	N-Ch P-Ch		7 8	11 12	nS
Rise Time[2]	t_r		N-Ch P-Ch		12 11	18 18	
Turn-Off Delay Time[2]	$t_{d(off)}$	P-Channel V_{DS} = -15V, R_L = 15Ω $I_D \cong$ -1A, V_{GS} = -10V, R_{GEN} = 6Ω	N-Ch P-Ch		12 14	18 21	
Fall Time[2]	t_f		N-Ch P-Ch		7 8	11 12	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)							
Forward Voltage[1]	V_{SD}	I_F = 0.9A, V_{GS} = 0V	N-Ch			1.2	V
		I_F = -0.9A, V_{GS} = 0V	P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	I_F = 0.9A, dI_F/dt = 100A / µS	N-Ch		40	80	nS
		I_F = -0.9A, dI_F/dt = 100A / µS	P-Ch		40	80	

[1]Pulse test : Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature.

REMARK: THIS PRODUCT MARKED WITH "50YWW"

Orders for parts with Lead-Free plating can be placed using the PXXXXXXG parts name.



Marking Description:

5 - N+P MOSFET

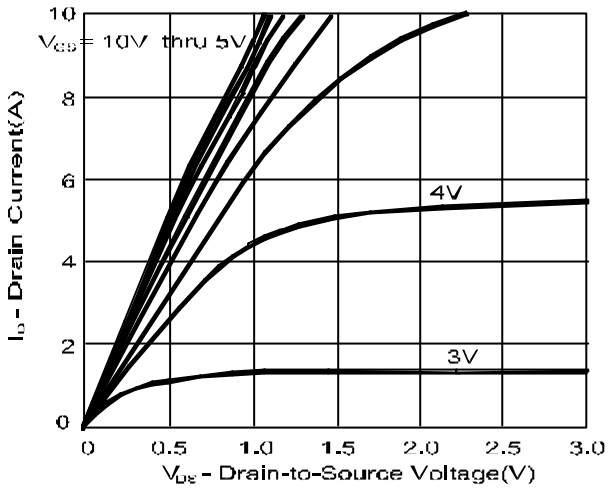
0 - Serial Number

Y - Year

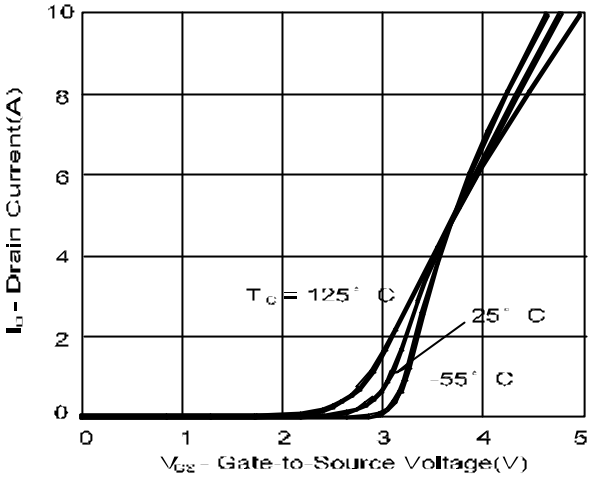
W - Week

N-CHANNEL

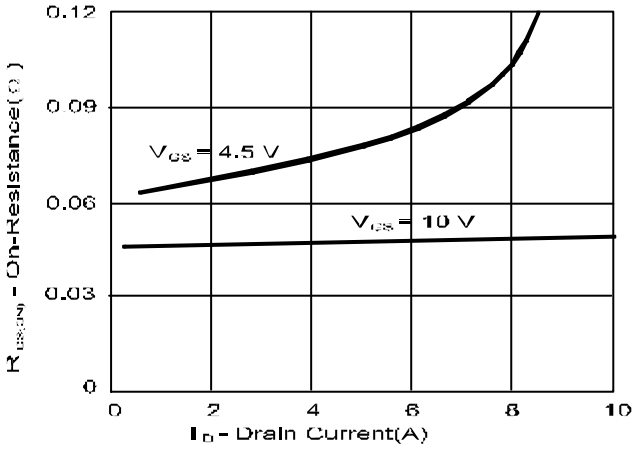
Output Characteristics



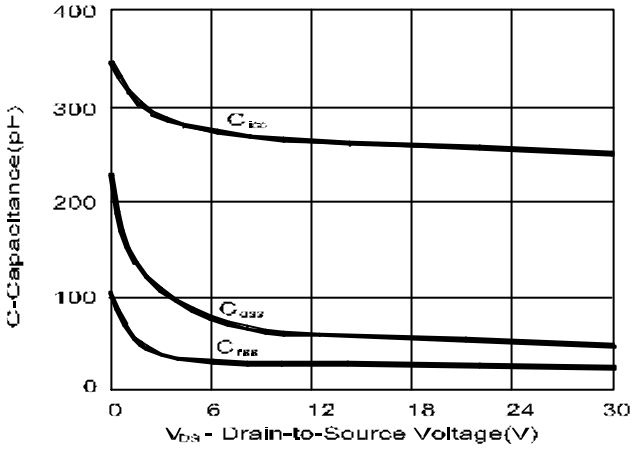
Transfer Characteristics



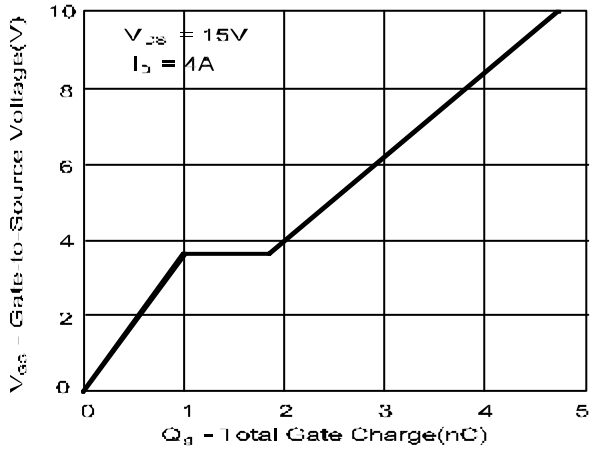
On-Resistance vs. Drain Current



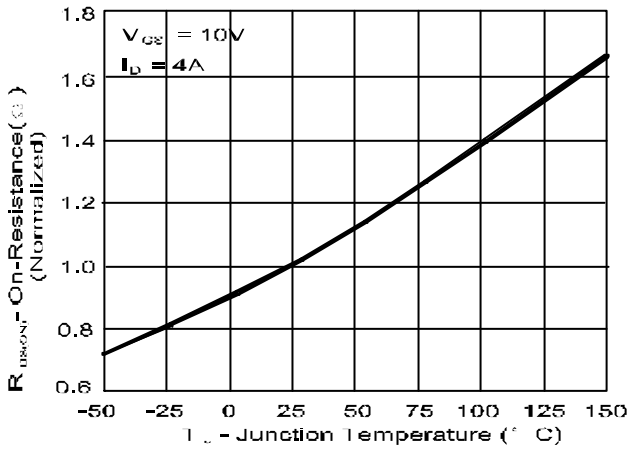
Capacitance



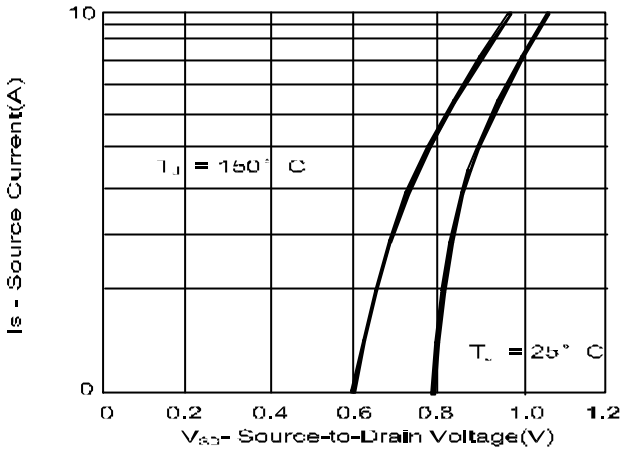
Gate Charge



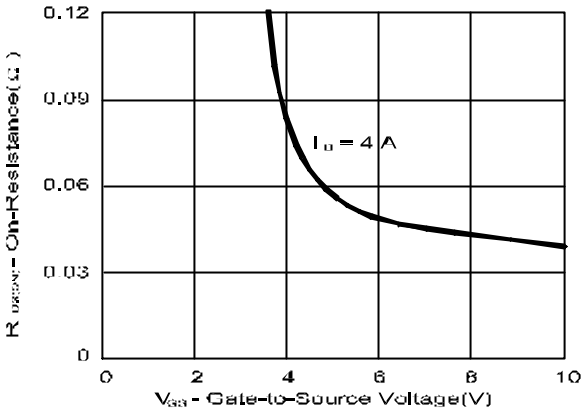
On-Resistance vs.Junction Temperature



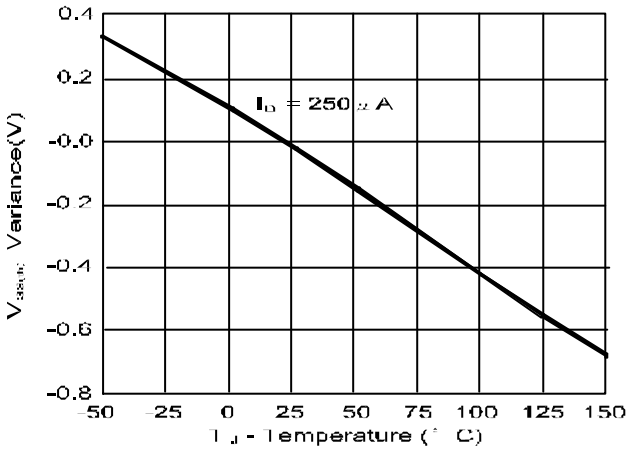
Source-Drain Diode Forward Voltage



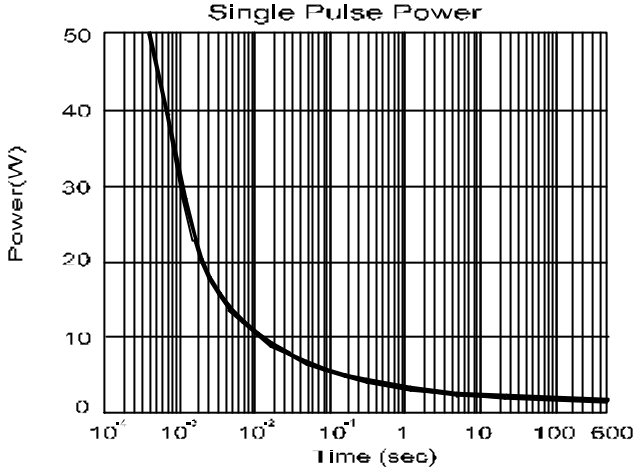
On-Resistance vs. Gate-to-Source Voltage



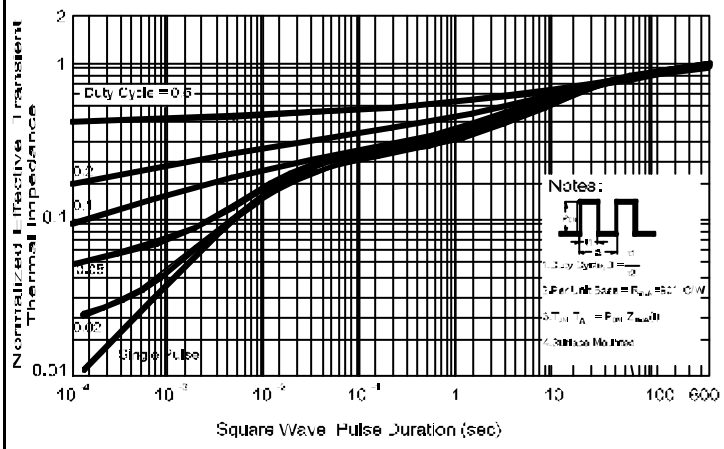
Threshold Voltage



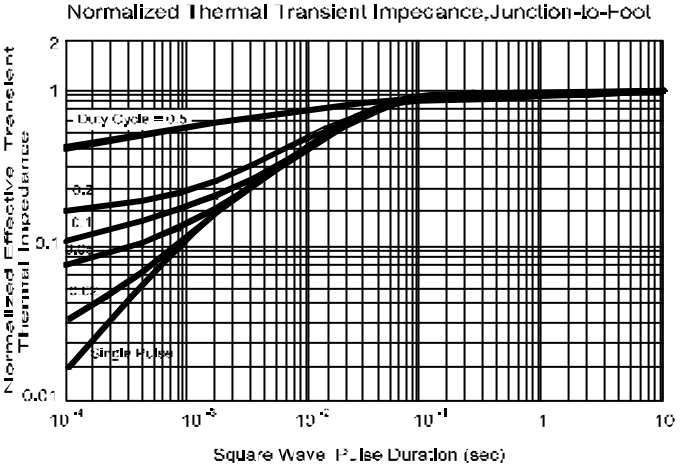
Single Pulse Power



Normalized Thermal Transient Impedance,Junction-to-Ambient

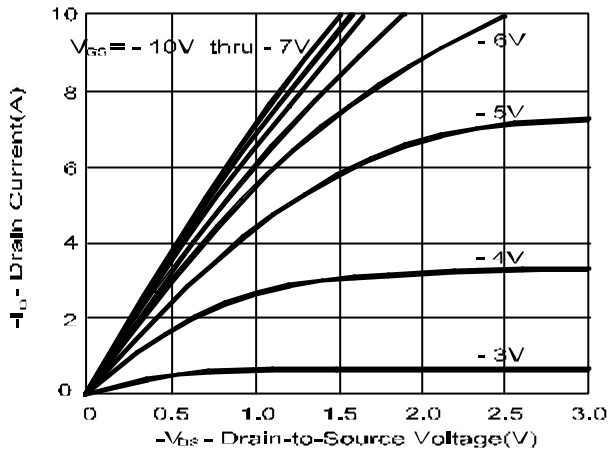


Normalized Thermal Transient Impedance,Junction-to-Foot

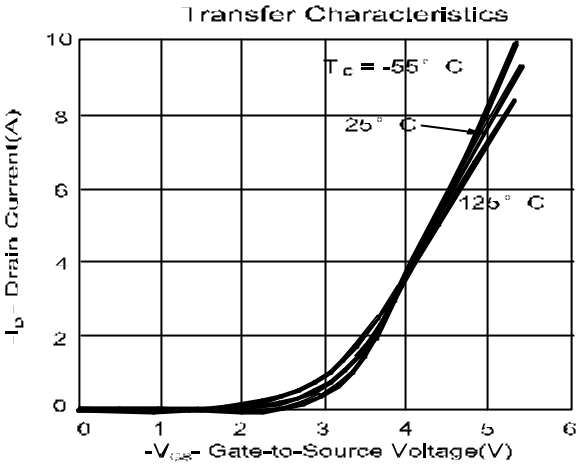


P-CHANNEL

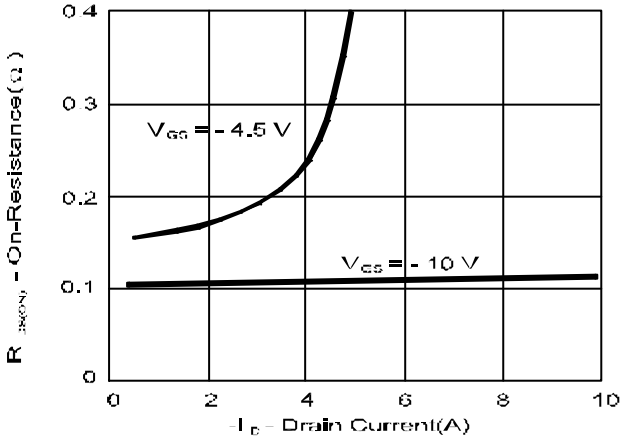
Output Characteristics



Transfer Characteristics



On-Resistance vs. Drain Current



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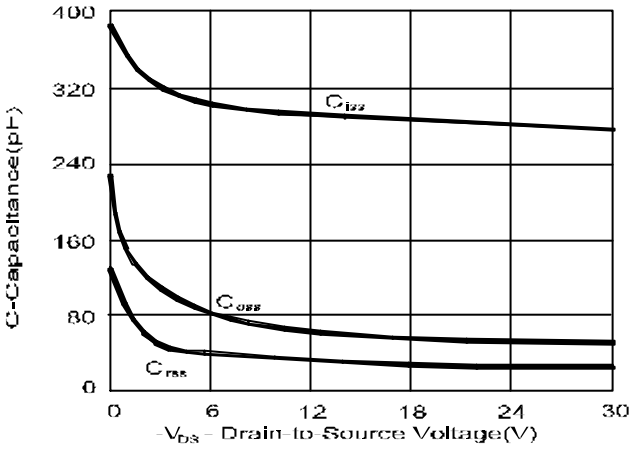
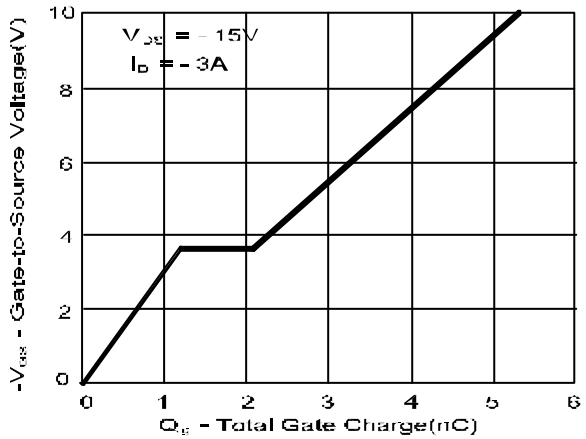
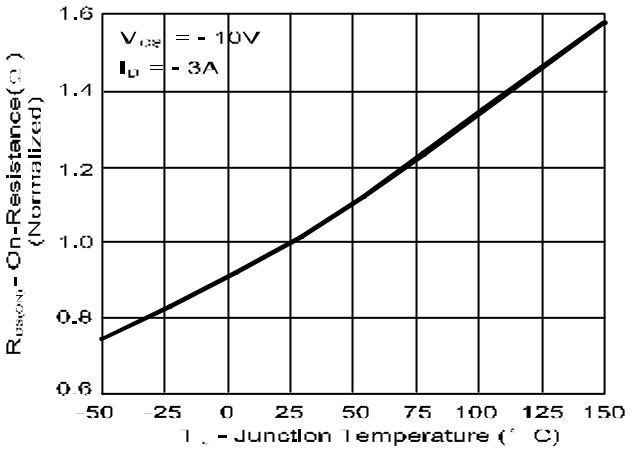


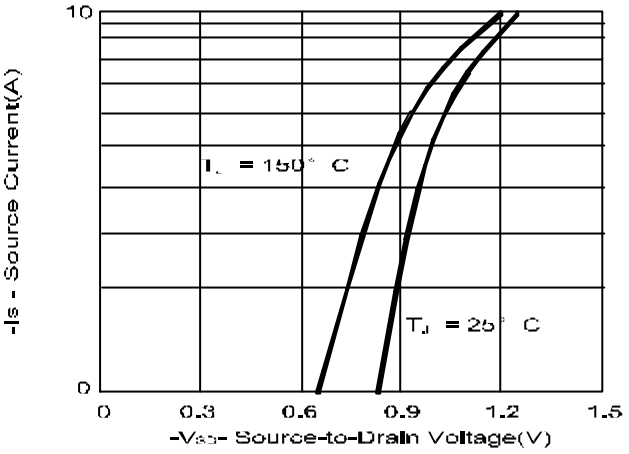
Gate Charge



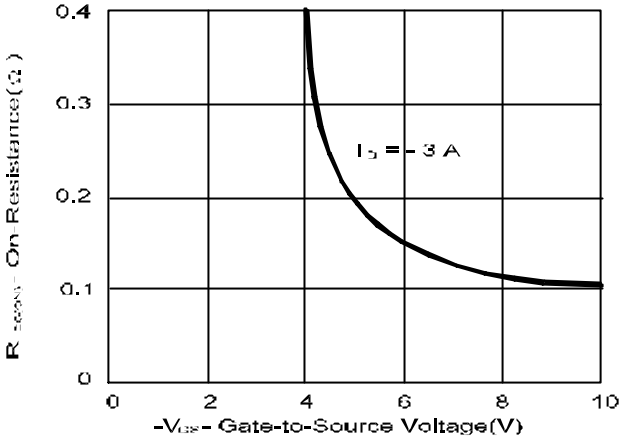
On-Resistance vs.Junction Temperature



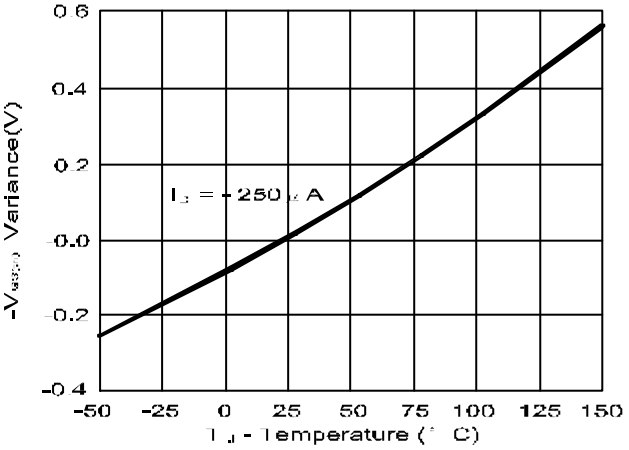
Source-Drain Diode Forward Voltage



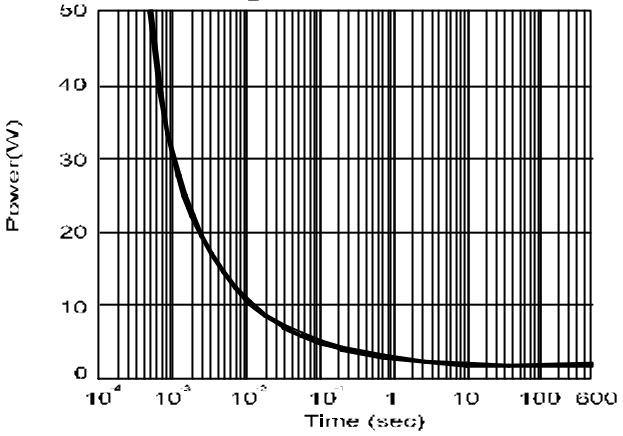
On-Resistance vs. Gate-to-Source Voltage



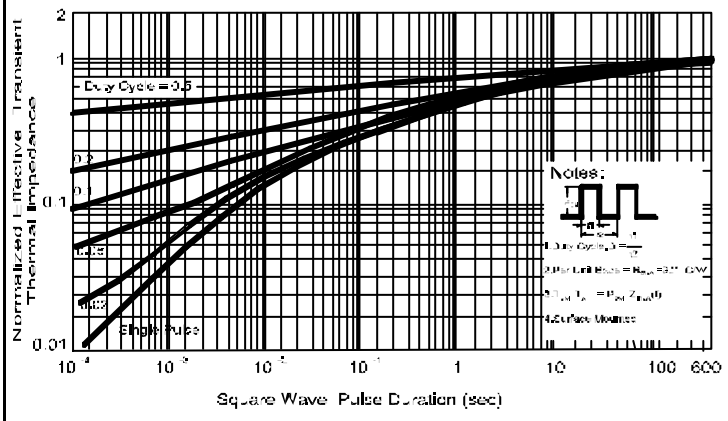
Threshold Voltage



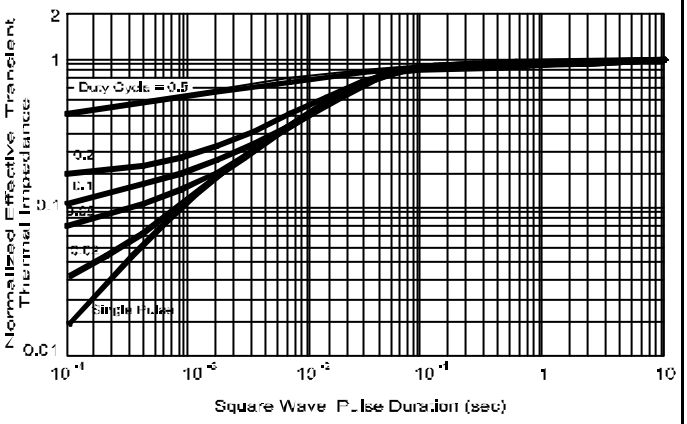
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impecance, Junction-to-Foot



TSOPJW-8 MECHANICAL DATA

Dimension	mm			Dimension	Mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	2.95	3.05	3.10	H	0.30	0.45	0.60
B	2.30	2.40	2.50	I			
C	2.65	2.85	3.05	J	7° NOM		
D	0.25	0.32	0.40	K	0.04 REF.		
E	0.65BSC			L	0.1	0.15	0.20
F	0.925		1.00	M			
G	0.01		0.1	N