

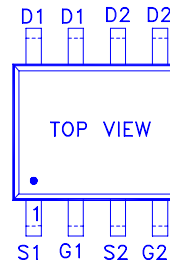
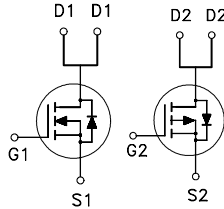
NIKO-SEM

**N- & P-Channel Enhancement Mode
Field Effect Transistor**

**P6503NJ
TSOPJW-8**

PRODUCT SUMMARY

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



G : GATE
D : DRAIN
S : SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ 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	$T_C = 25\text{ }^\circ\text{C}$	I_D	4	-3	A
	$T_C = 70\text{ }^\circ\text{C}$		3	-2	
Pulsed Drain Current ¹		I_{DM}	10	-10	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	2		W
	$T_C = 70\text{ }^\circ\text{C}$		1.3		
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		$^\circ\text{C}$
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	$^\circ\text{C} / \text{W}$

¹Pulse width limited by maximum junction temperature.

²Duty cycle $\leq 1\%$

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
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
		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	m
		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} = 0.5V _{(BR)DSS} , V _{GS} = 10V, I _D = 3A	N-Ch		5	7.5	nC
Gate-Source Charge ²	Q _{gs}		P-Ch		5.5	6.6	
Gate-Drain Charge ²	Q _{gd}	P-Channel V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = -10V, I _D = -2A	N-Ch		0.8		nC
			P-Ch		1.2		

Turn-On Delay Time ²	$t_{d(on)}$	N-Channel $V_{DS} = 15V, R_L = 15$	N-Ch		7	11	nS
			P-Ch		8	12	
Rise Time ²	t_r	$I_D \cong 1A, V_{GS} = 10V, R_{GEN} = 6$	N-Ch		12	18	
			P-Ch		11	18	
Turn-Off Delay Time ²	$t_{d(off)}$	P-Channel $V_{DS} = -15V, R_L = 15$	N-Ch		12	18	
			P-Ch		14	21	
Fall Time ²	t_f	$I_D \cong -1A, V_{GS} = -10V, R_{GEN} = 6$	N-Ch		7	11	
			P-Ch		8	12	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_c = 25 °C)

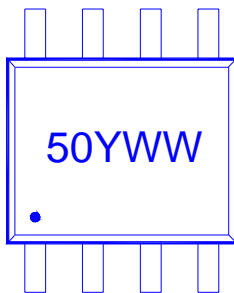
Forward Voltage ¹	V_{SD}	$I_F = 0.9A, V_{GS} = 0V$	N-Ch			1.2	V
		$I_F = -0.9A, V_{GS} = 0V$	P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	$I_F = 0.9A, di_F/dt = 100A / \mu S$	N-Ch		40	80	nS
		$I_F = -0.9A, di_F/dt = 100A / \mu S$	P-Ch		40	80	

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

²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

REMARK: THIS PRODUCT MARKED WITH "50YWW"



Marking Description:

5 - N+P MOSFET

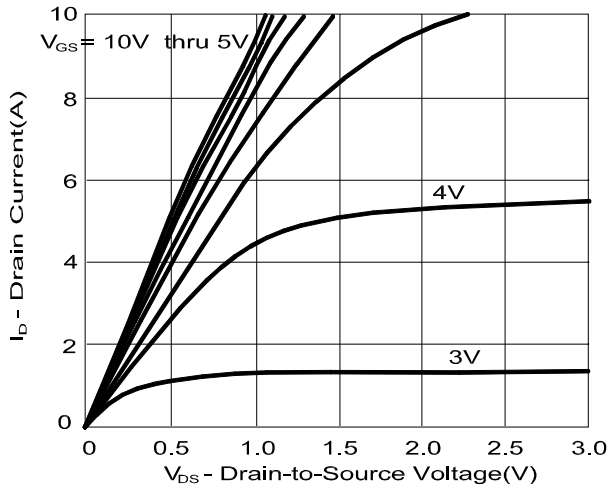
0 - Serial Number

Y - Year

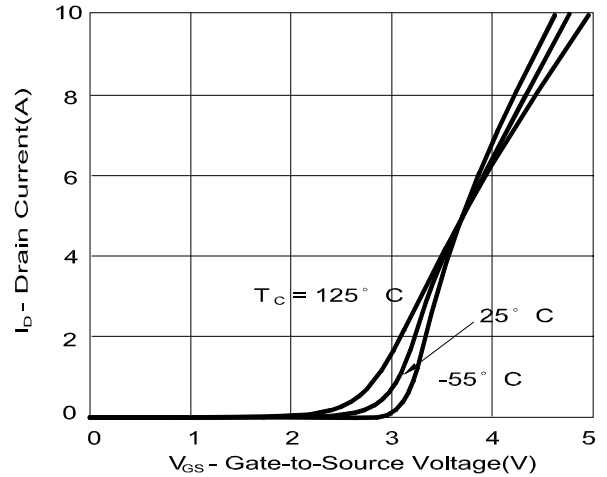
W - Week

N-CHANNEL

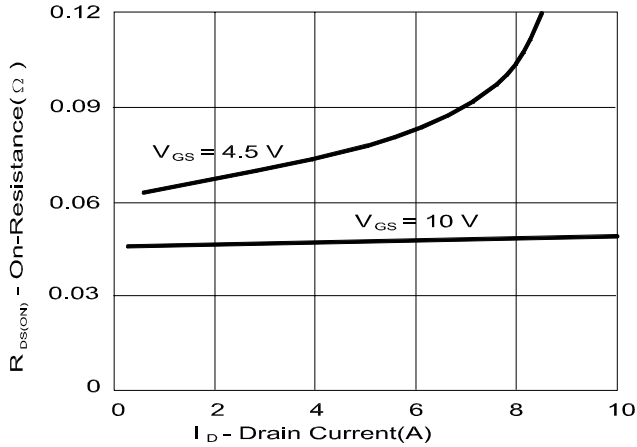
Output Characteristics



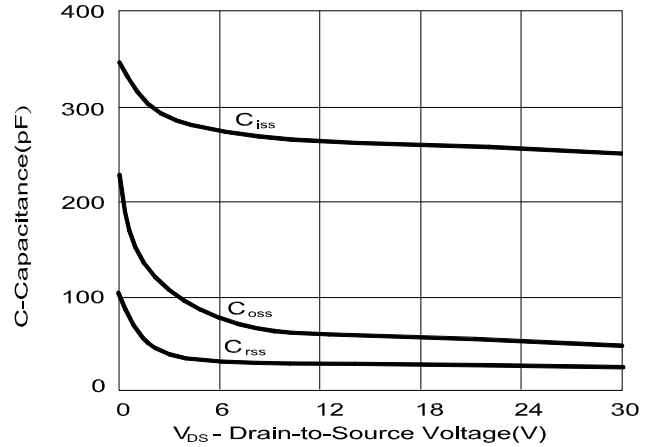
Transfer Characteristics



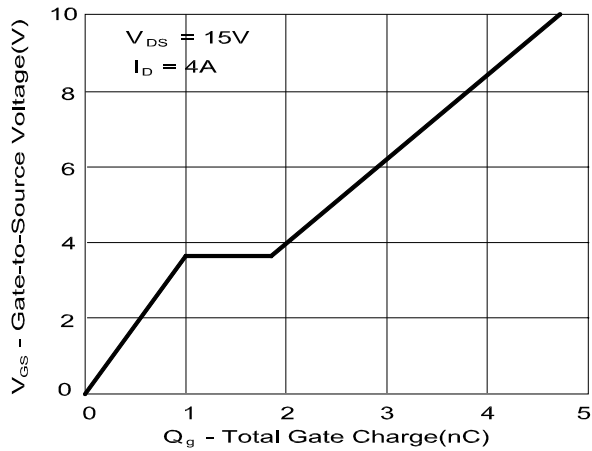
On-Resistance vs. Drain Current



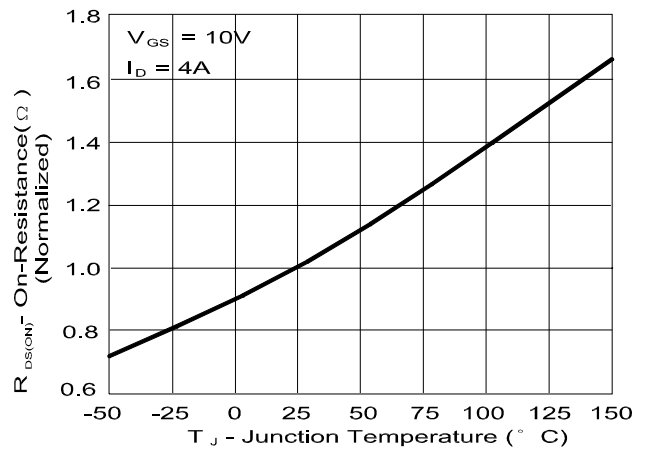
Capacitance

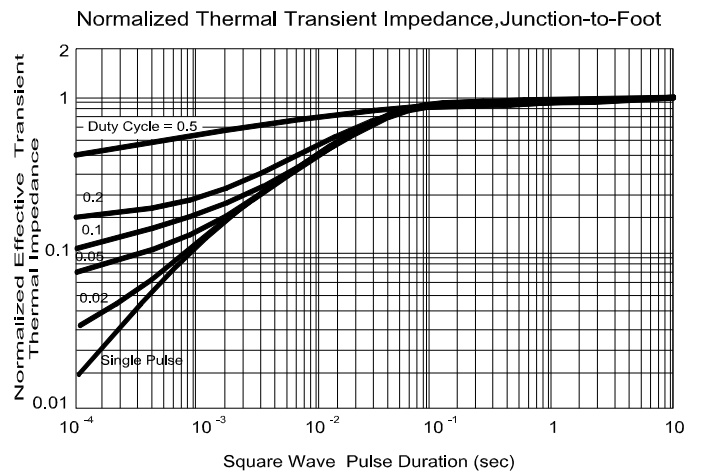
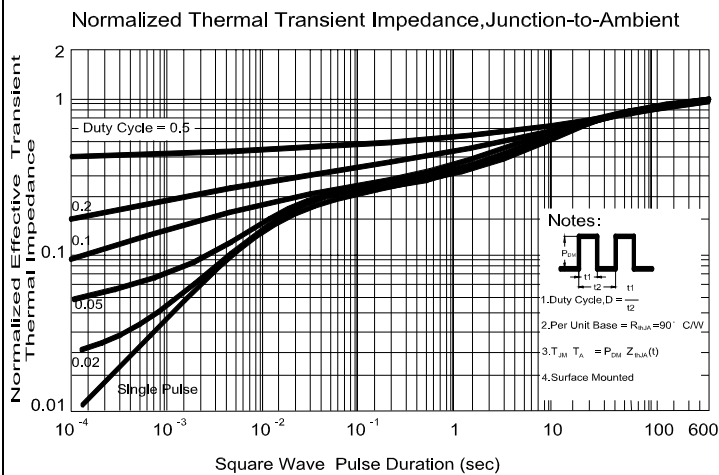
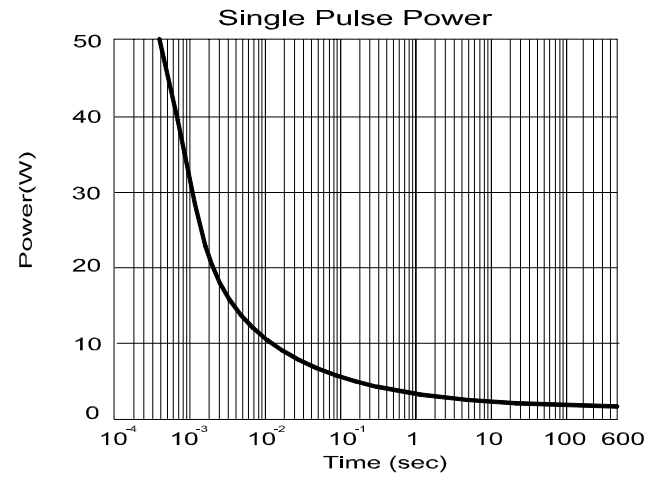
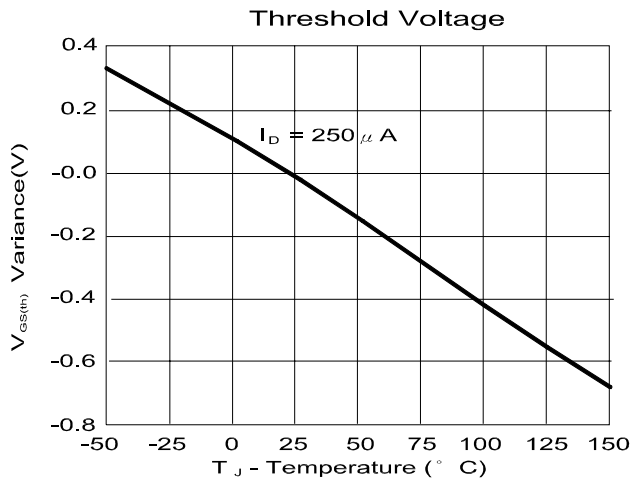
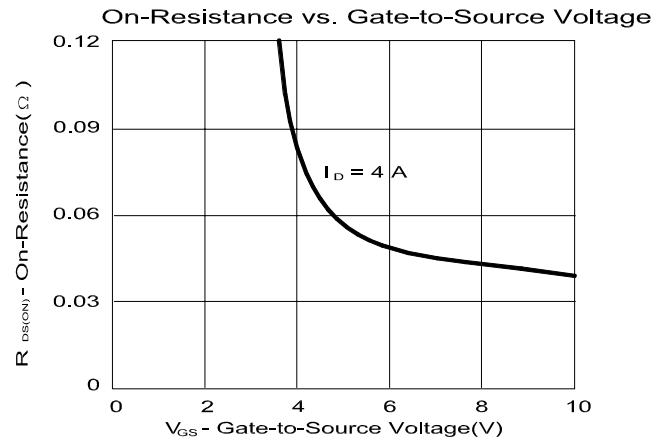
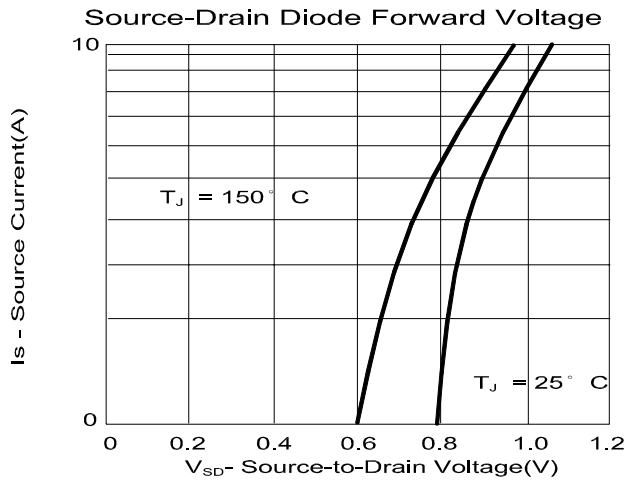


Gate Charge



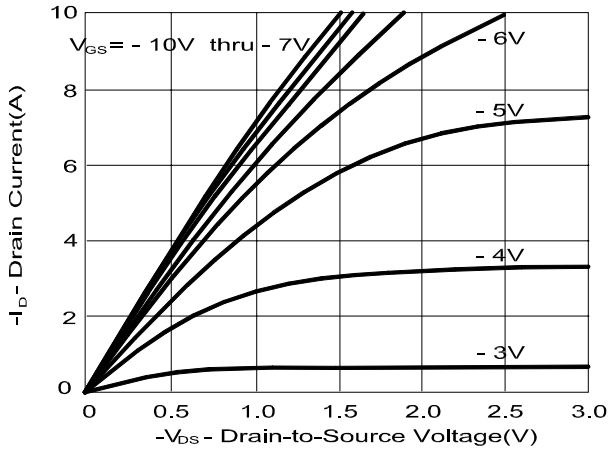
On-Resistance vs. Junction Temperature



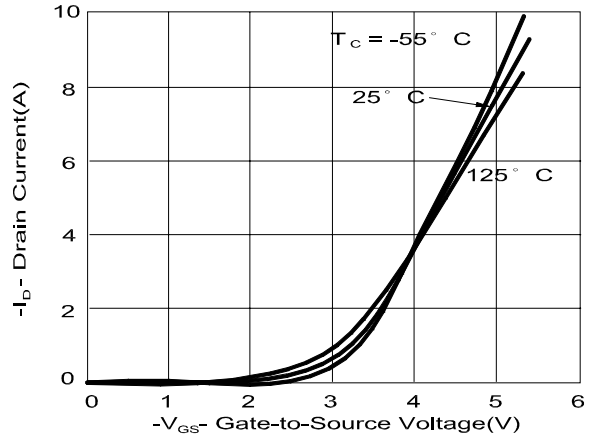


P-CHANNEL

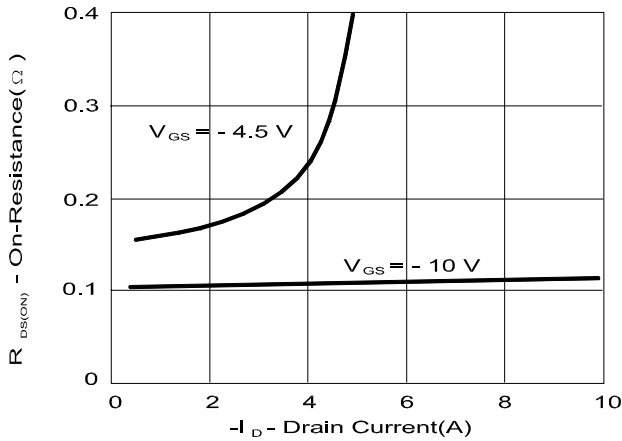
Output Characteristics



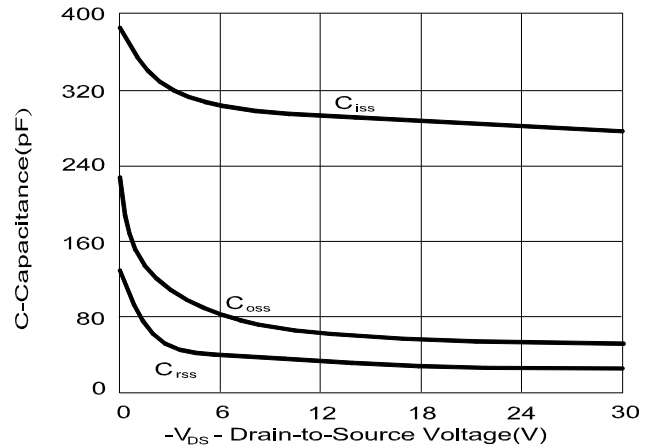
Transfer Characteristics



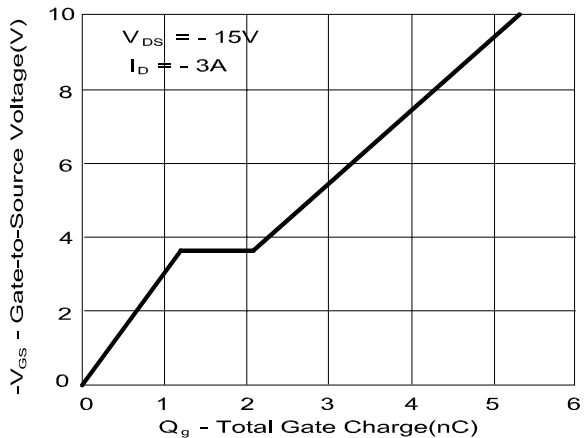
On-Resistance vs. Drain Current



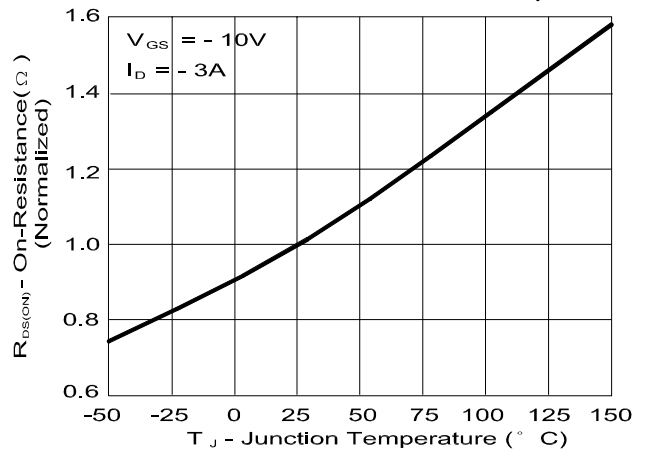
Capacitance

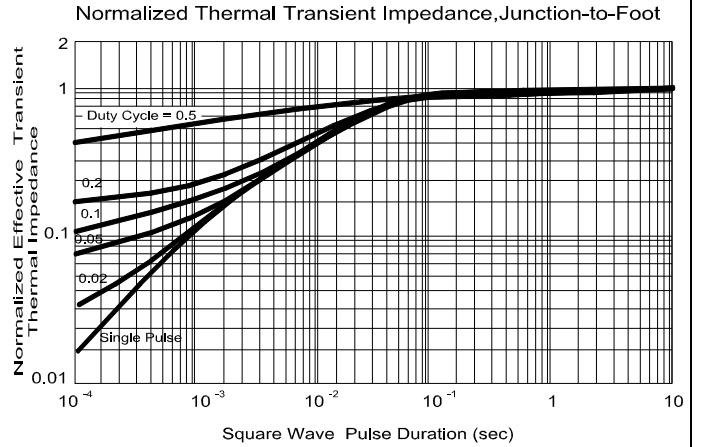
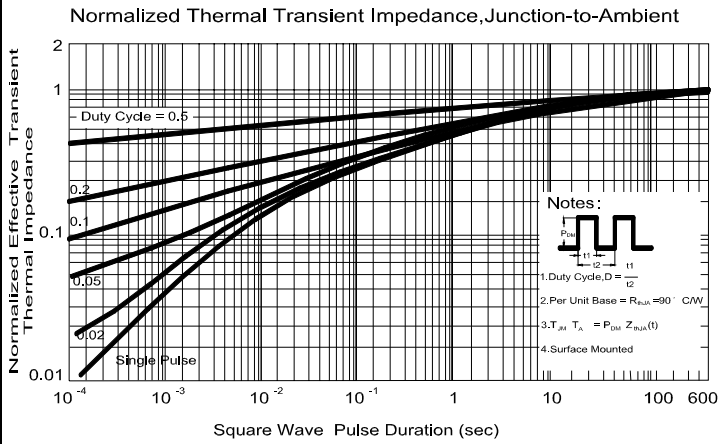
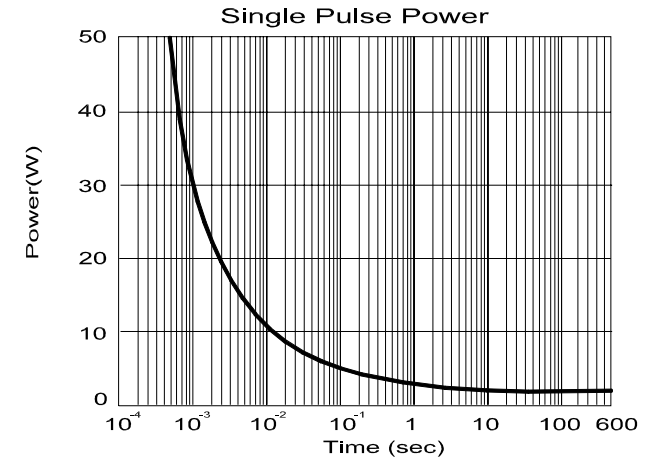
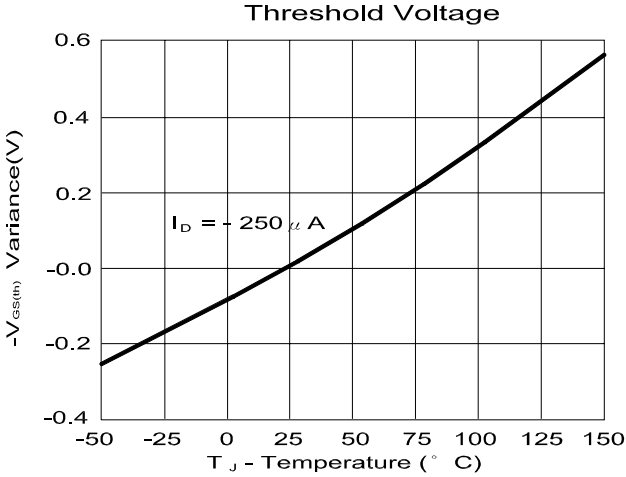
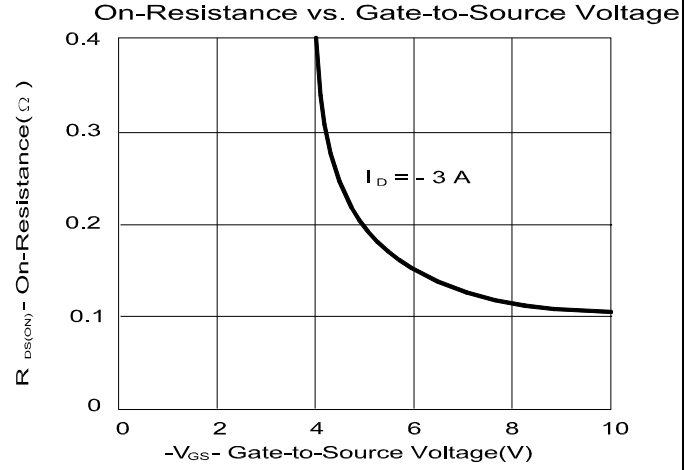
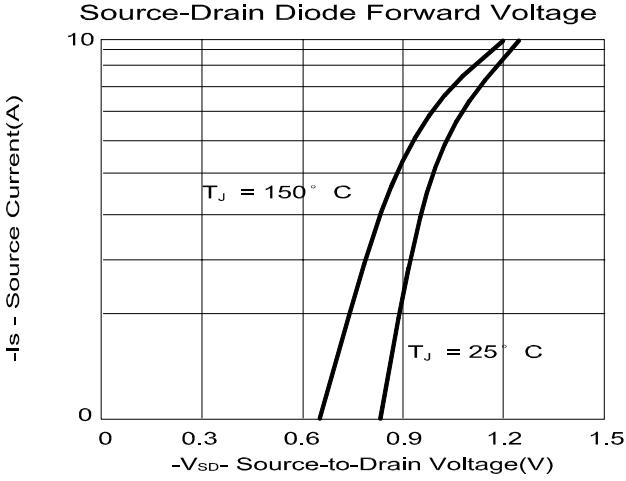


Gate Charge



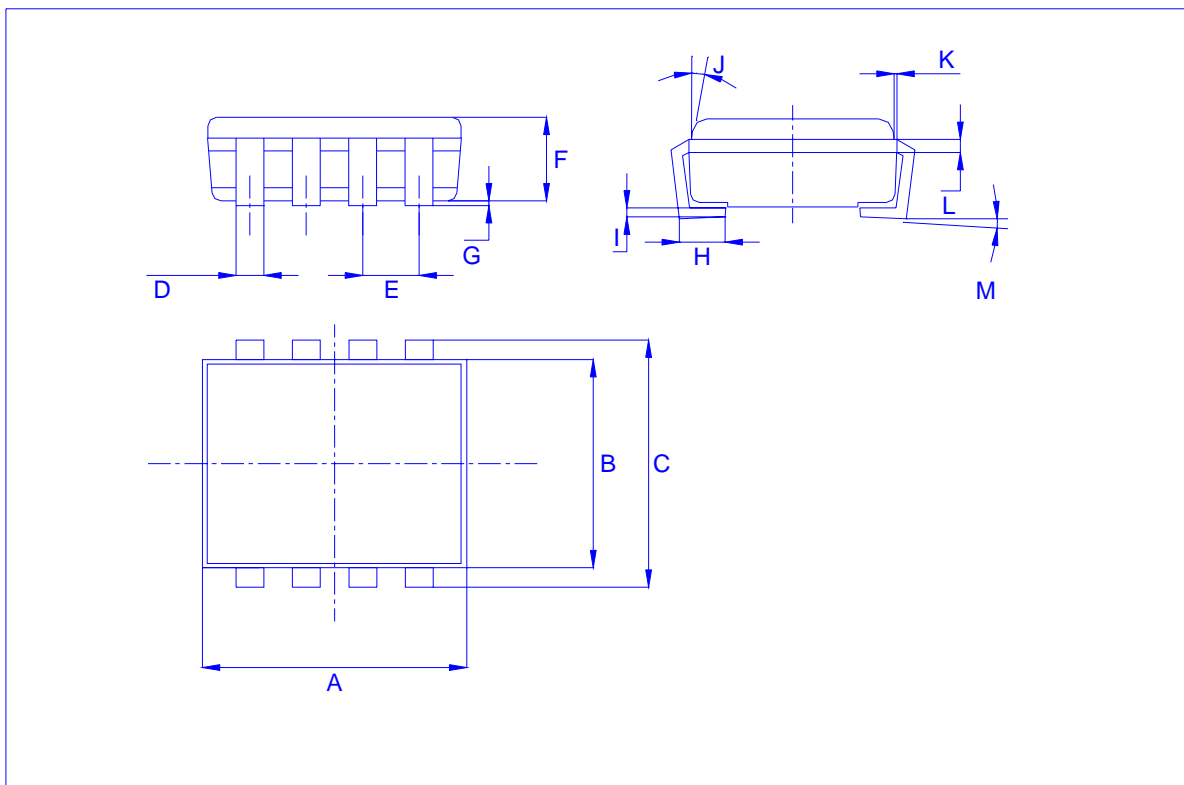
On-Resistance vs. Junction Temperature





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			



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