NIKO-SEM

P-Channel Logic Level Enhancement Mode Field Effect Transistor(Preliminary)

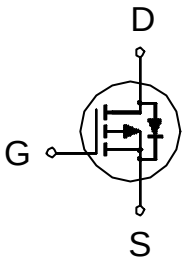
PA503EMG

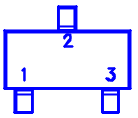
SOT-23

Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30	150mΩ	-2A





1 :GATE
2 :DRAIN
3 :SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	-2	A
	T_C = 70 °C		-1.4	
Pulsed Drain Current[1]		I_{DM}	-10	
Power Dissipation	T_C = 25 °C	P_D	1.25	W
	T_C = 70 °C		0.8	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		166	°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			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.0	-1.5	-2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V, V_{GS} = 0V			-1	μA
		V_{DS} = -20V, V_{GS} = 0V, T_J = 125 °C			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -10V	-5			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -10V, I_D =-2A		100	150	mΩ
		V_{GS} = -4.5V, I_D = -1A		180	250	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -2A		16		S

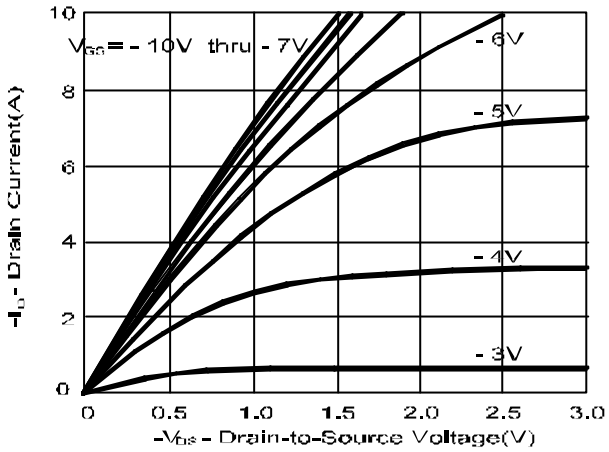
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		410		pF
Output Capacitance	C_{oss}			220		
Reverse Transfer Capacitance	C_{rss}			85		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -2A		5.8	10	nC
Gate-Source Charge[2]	Q_{gs}			0.85		
Gate-Drain Charge[2]	Q_{gd}			1.70		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = -15V, $I_D \cong$ -1A, V_{GS} = -10V, R_G = 6Ω		13		nS
Rise Time[2]	t_r			36		
Turn-Off Delay Time[2]	$t_{d(off)}$			42		
Fall Time[2]	t_f			34		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				-1.6	A
Pulsed Current[3]	I_{SM}				-3	
Forward Voltage[1]	V_{SD}	I_F = -1A, V_{GS} = 0V			-1.2	V

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

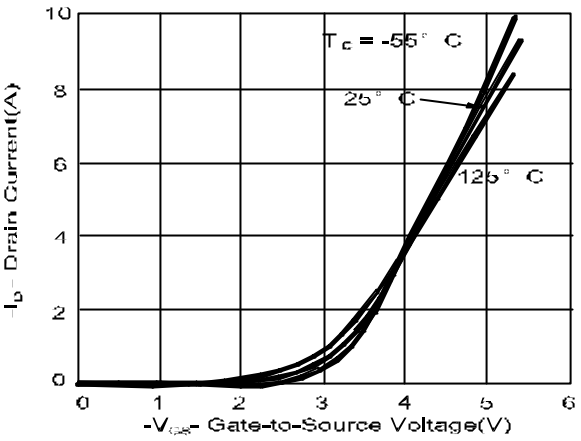
REMARK: THE PRODUCT MARKED WITH "21YWW", DATE CODE or LOT #

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

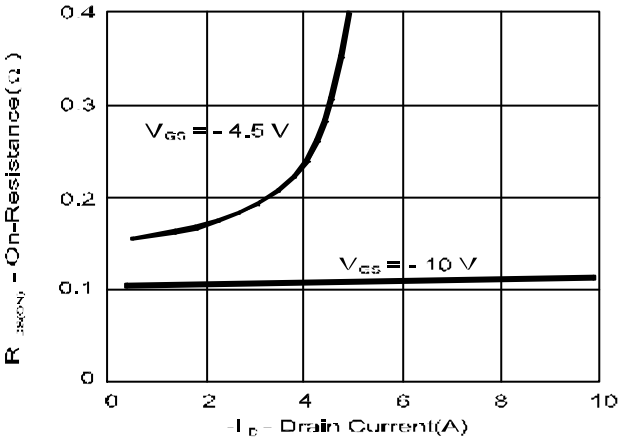
Output Characteristics



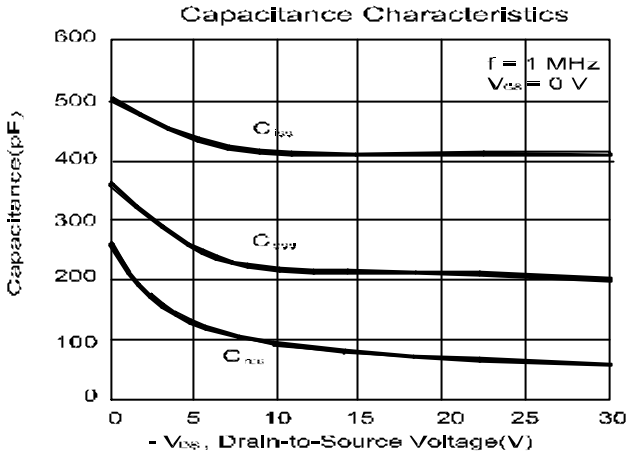
Transfer Characteristics



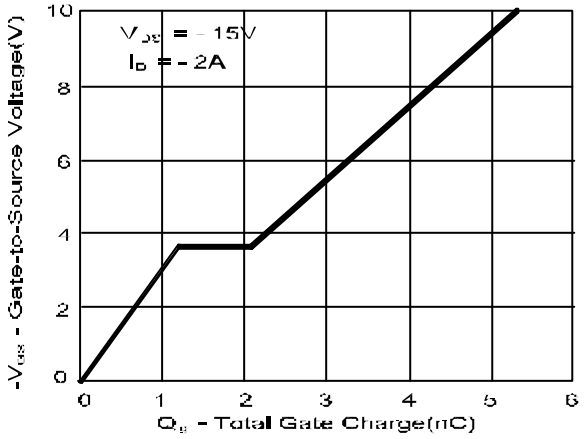
On-Resistance vs. Drain Current



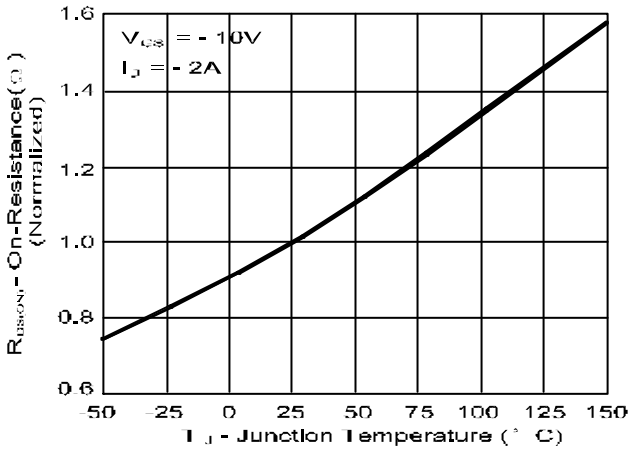
Capacitance Characteristics



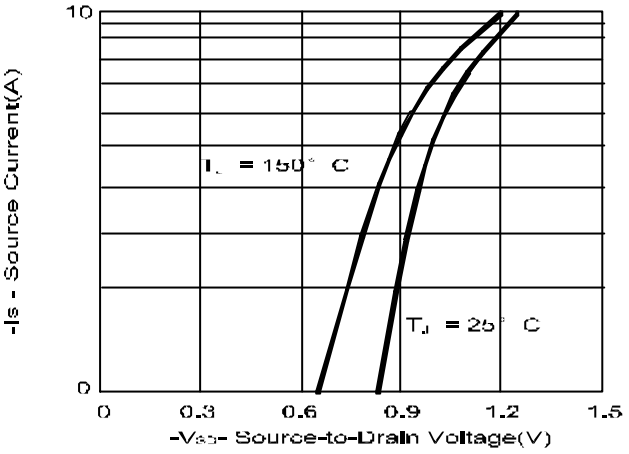
Gate Charge



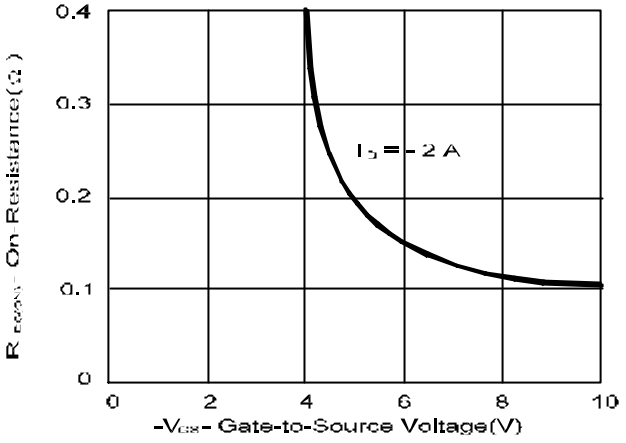
On-Resistance vs.Junction Temperature



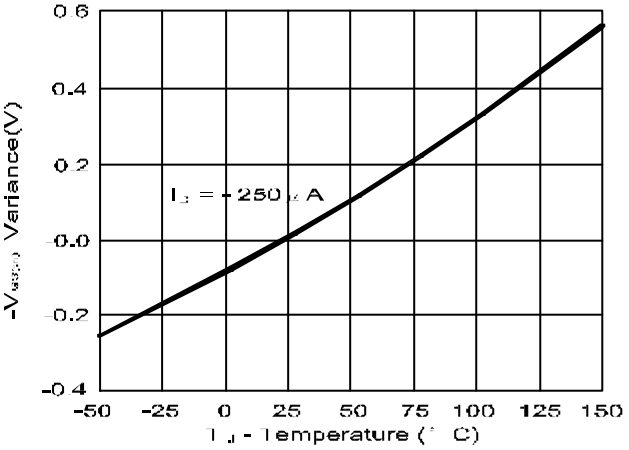
Source-Drain Diode Forward Voltage



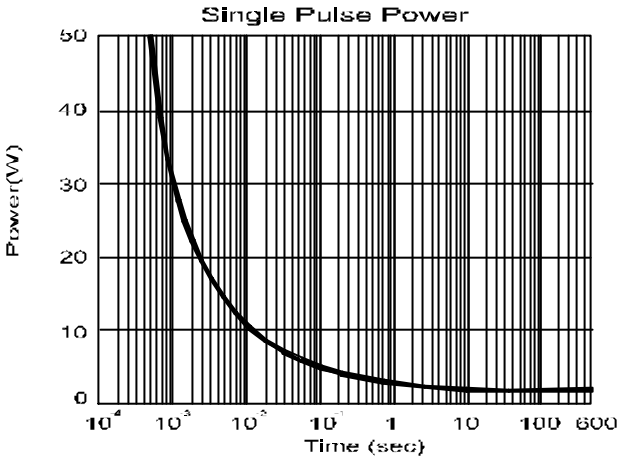
On-Resistance vs. Gate-to-Source Voltage



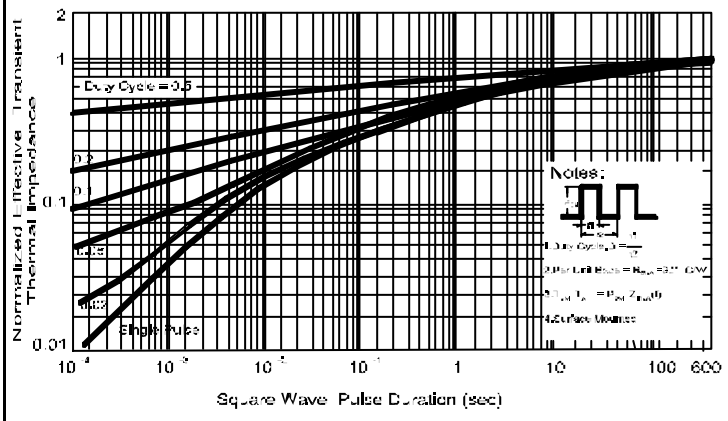
Threshold Voltage



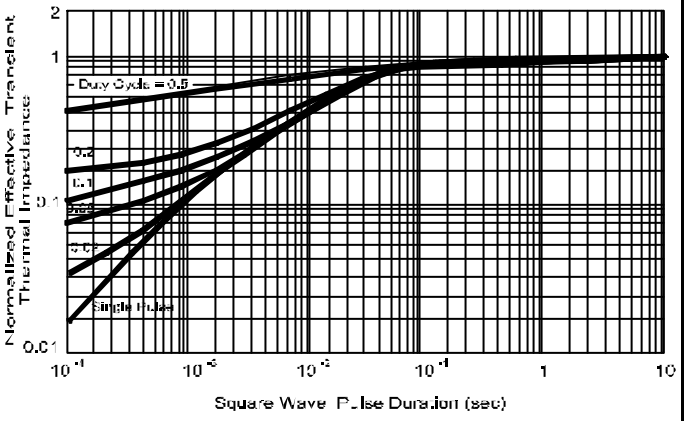
Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impecance, Junction-to-Foot



SOT-23 (M3) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.85		1.15	H	0.1	0.15	0.25
B	2.4		3	I	0.37		
C	1.4	1.6	1.8	J			
D	2.7	2.9	3.1	K			
E	1	1.1	1.3	L			
F	0		0.1	M			
G	0.35		0.5	N