NIKO-SEM

P-Channel Logic Level Enhancement Mode Field Effect Transistor

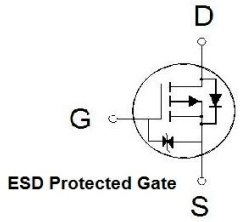
PZ5203EMAA

SOT-23(S)

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	60mΩ	-2.8A

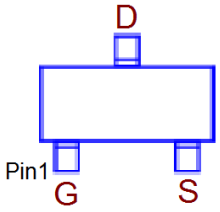


Features

- Pb−Free, Halogen Free and RoHS compliant.
- Low $R_{DS(on)}$ to Minimize Conduction Losses.
- Ohmic Region Good $R_{DS(on)}$ Ratio.
- Optimized Gate Charge to Minimize Switching Losses.
- Products Integrated ESD diode with ESD Protected up to 2KV.

Applications

- Protection Circuits Applications.
- Logic/Load Switch Circuits Applications.



G: GATE
D: DRAIN
S: SOURCE

ABSOLUTE MAXIMUM RATINGS (T_A = 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_A = 25 ° C	I_D	-2.8	A
	T_A = 70 ° C		-2.2	
Pulsed Drain Current[1]		I_{DM}	-20	
Power Dissipation	T_A = 25 ° C	P_D	0.8	W
	T_A = 70 ° C		0.5	
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[2]	$R_{\theta JA}$		162	° C/W

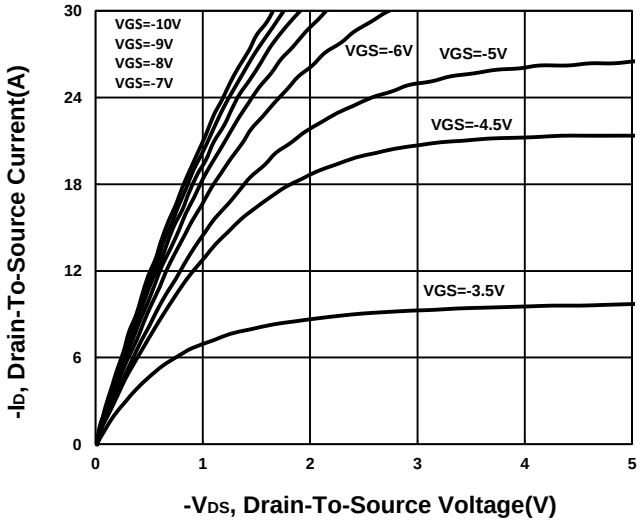
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

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

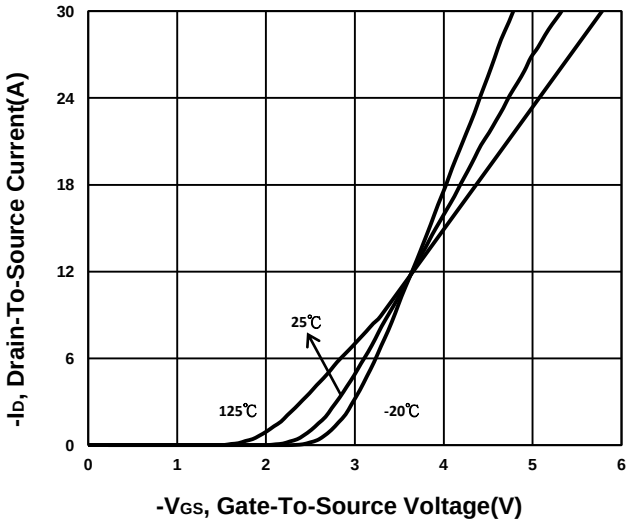
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.3	-1.65	-2.3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±16V			±30	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V, V_{GS} = 0V			-1	μA
		V_{DS} = -20V, V_{GS} = 0V, T_J = 55 ° C			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -2.8A		70	90	mΩ
		V_{GS} = -10V, I_D = -2.8A		52	60	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -2.8A		9		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		521		pF
Output Capacitance	C_{oss}			92		
Reverse Transfer Capacitance	C_{rss}			76		
Total Gate Charge[2]	Q_g	V_{DS} = -15V, V_{GS} = -10V, I_D = -2.8A		12.3		nC
Gate-Source Charge[2]	Q_{gs}			1.4		
Gate-Drain Charge[2]	Q_{gd}			2.9		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -15V, I_D ≅ -2.8A, V_{GS} = -10V, R_{GS} = 6Ω		12		nS
Rise Time[2]	t_r			21		
Turn-Off Delay Time[2]	$t_{d(off)}$			52		
Fall Time[2]	t_f			32		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 ° C)						
Continuous Current	I_S				-0.7	A
Forward Voltage[1]	V_{SD}	I_F = -2.8A, V_{GS} = 0V			-1.1	V
Reverse Recovery Time	t_{rr}	I_F = -2.8A,dI_F/dt = 100 A/μs		13.5		nS
Reverse Recovery Charge	Q_{rr}			5		uC

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

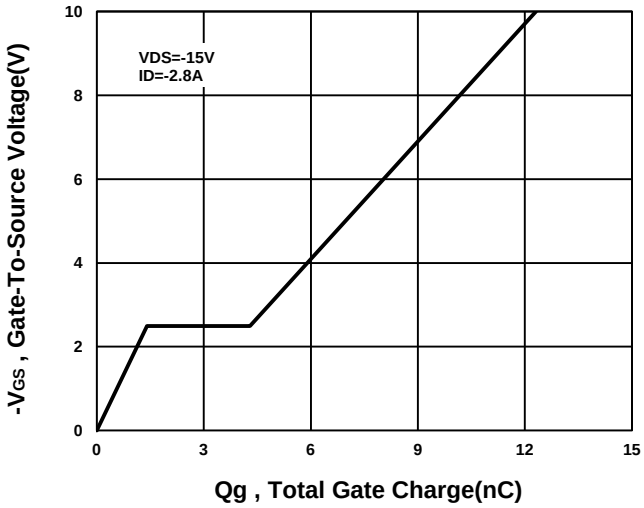
Output Characteristics



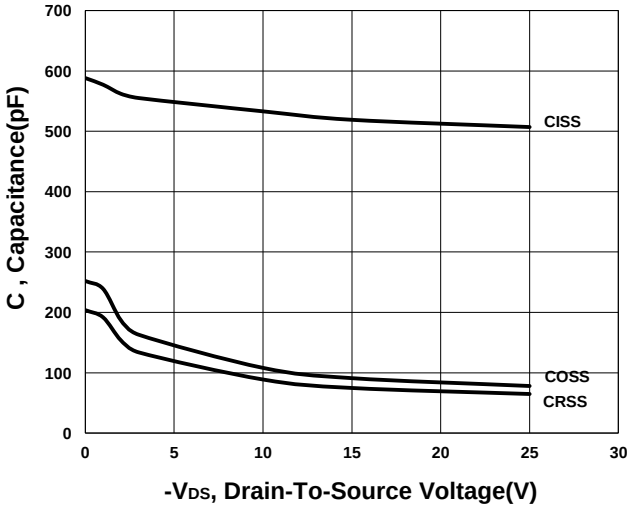
Transfer Characteristics



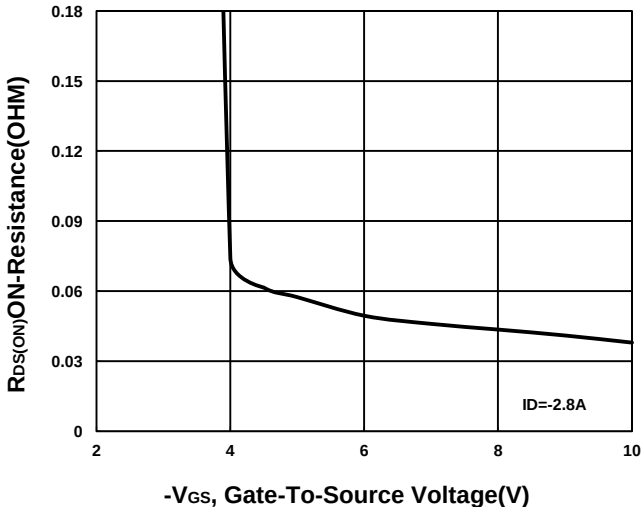
Gate charge Characteristics



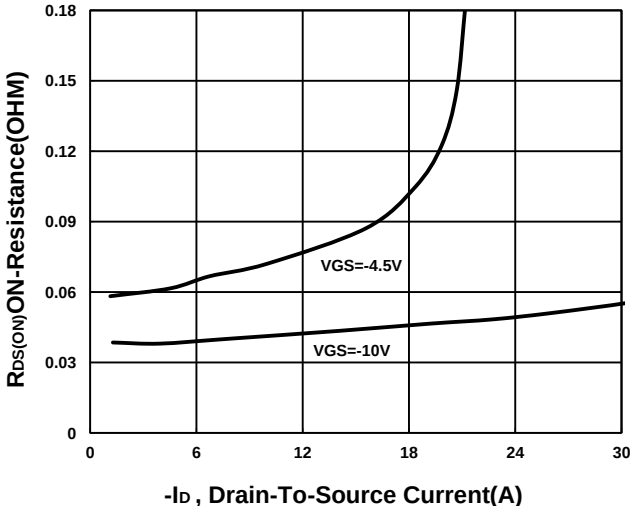
Capacitance Characteristic



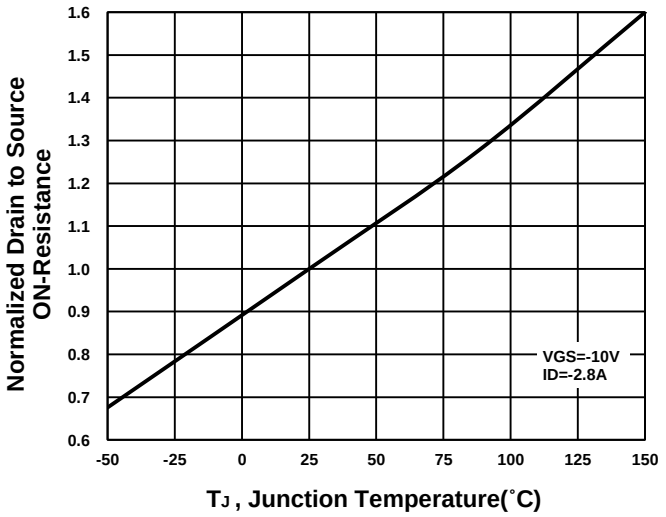
On-Resistance VS Gate-To-Source



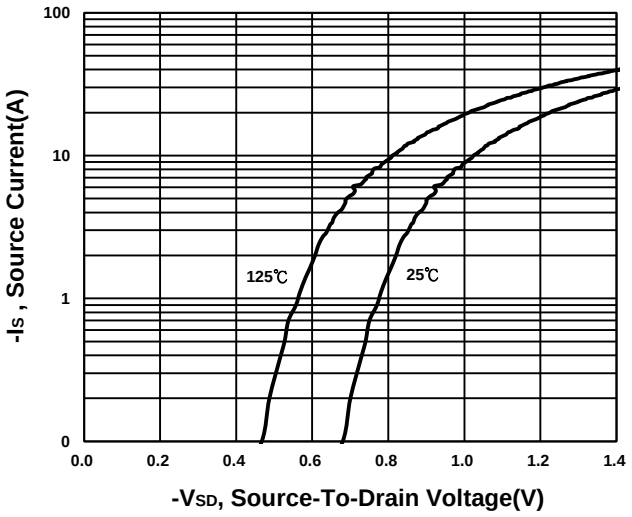
On-Resistance VS Drain Current



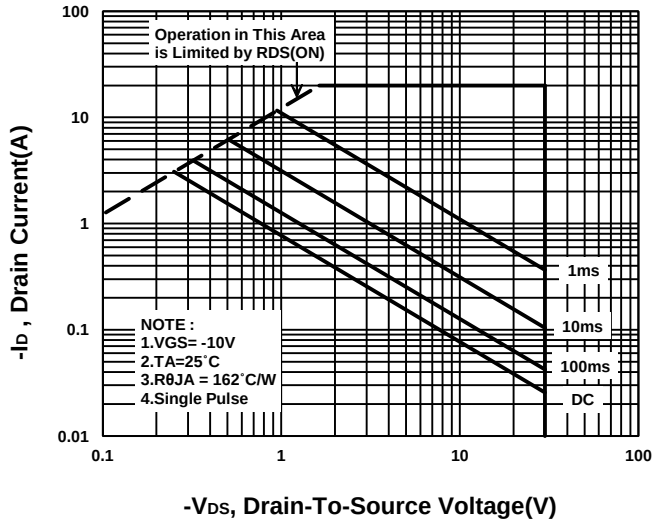
On-Resistance VS Temperature



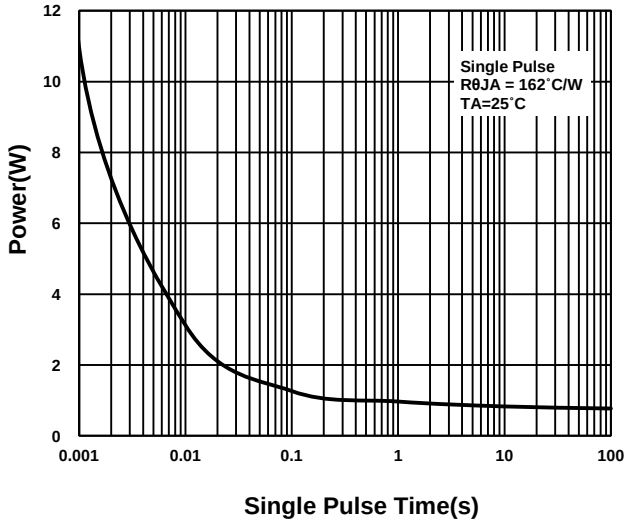
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve