NIKO-SEM

P-Channel Enhancement Mode Field Effect Transistor

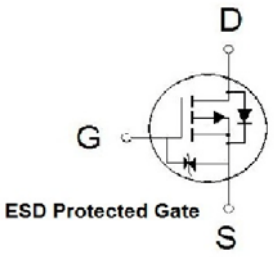
PZ0703ETF

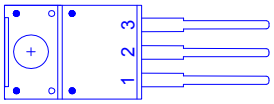
TO-220F

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	7.5mΩ	-55A





1. GATE
2. DRAIN
3. SOURCE

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.

Applications

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

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}	±16	V
Continuous Drain Current[2,3]	T_C = 25 °C	I_D	-55	A
	T_C = 100°C		-35	
Pulsed Drain Current[1]		I_{DM}	-130	
Avalanche Current		I_{AS}	-50	
Avalanche Energy	L = 0.1mH	E_{AS}	125	mJ
Power Dissipation	T_C = 25 °C	P_D	41	W
	T_C = 100°C		17	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

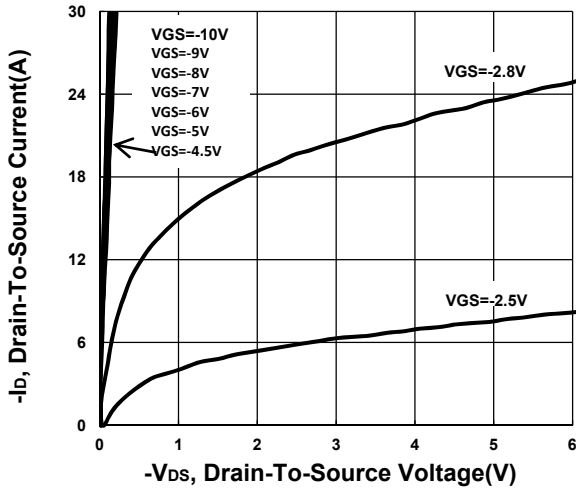
[1]Pulse width limited by maximum junction temperature.
[2]Limited only by maximum temperature allowed.
[3]Package limitation current is -55A.

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

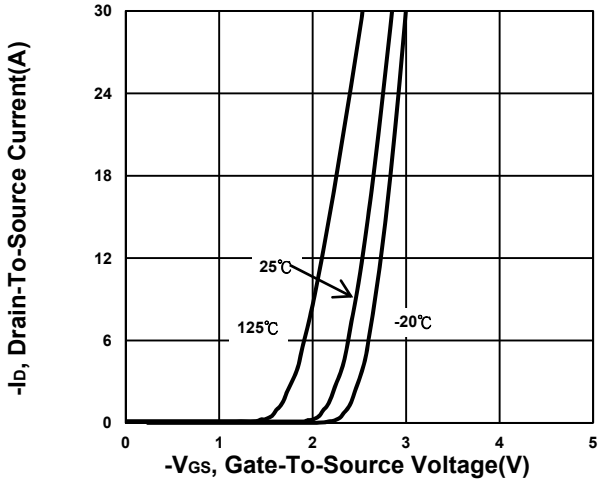
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.6	-3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±16V			±30	uA
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	μA
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -20A		7.6	12	mΩ
		V_{GS} = -10V, I_D = -20A		5	7.5	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -20A		57		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		4987		pF
Output Capacitance	C_{oss}			1095		pF
Reverse Transfer Capacitance	C_{rss}			1018		pF
Gate resistance	Rg	V_{GS}=0V,V_{DS}=0V, f=1MHz		2.4		Ω
Total Gate Charge[2]	Q_g	V_{DS} = -15V , V_{GS}= -10V , I_D =-20A		128		nC
Gate-Source Charge[2]	Q_{gs}			15		nC
Gate-Drain Charge[2]	Q_{gd}			34		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -15V, I_D ≅ -20A, V_{GS} = -10V, R_{GS} = 6Ω		32		nS
Rise Time[2]	t_r			24		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			90		nS
Fall Time[2]	t_f			44		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-31	A
Forward Voltage[1]	V_{SD}	I_F = -20A, V_{GS} = 0V			-1.3	V
Reverse Recovery Time	t_{rr}	I_F = -20A, dI_F/dt = 100A / μS		32		nS
Reverse Recovery Charge	Q_{rr}			21		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current is -55A.

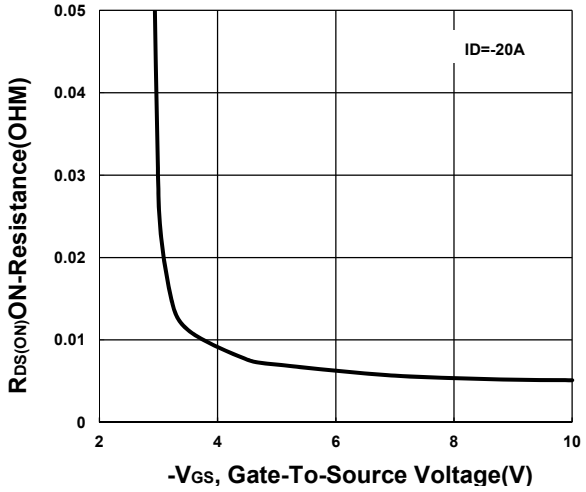
Output Characteristics



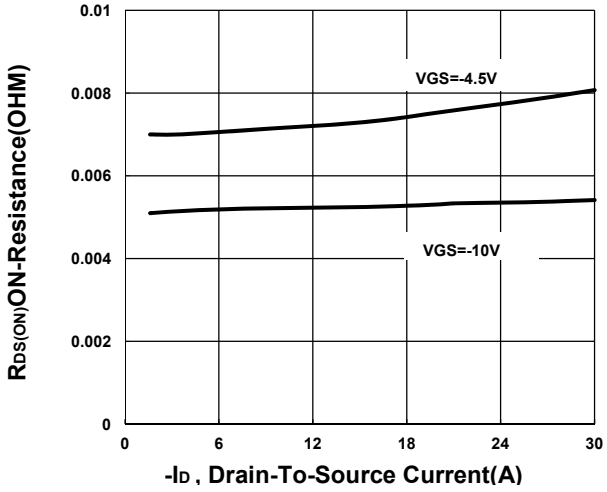
Transfer Characteristics



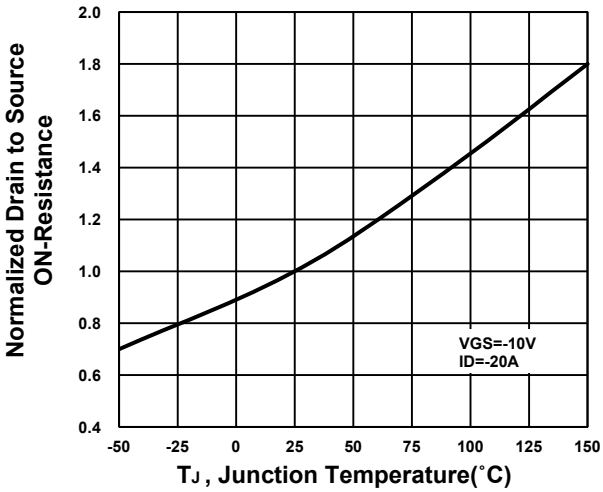
On-Resistance VS Gate-To-Source



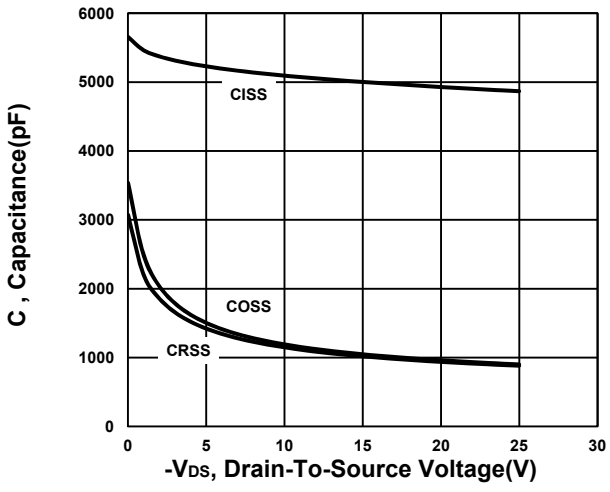
On-Resistance VS Drain Current



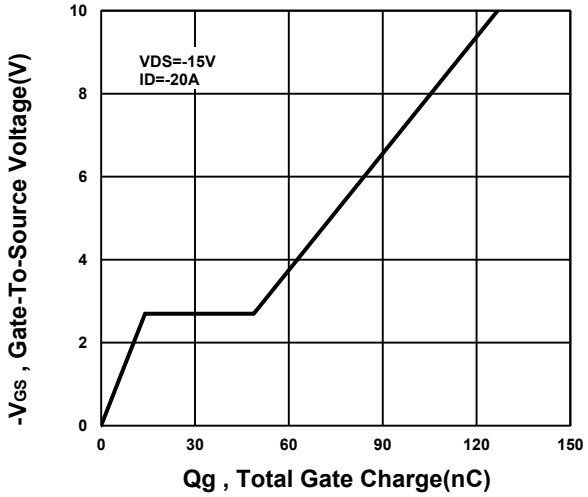
On-Resistance VS Temperature



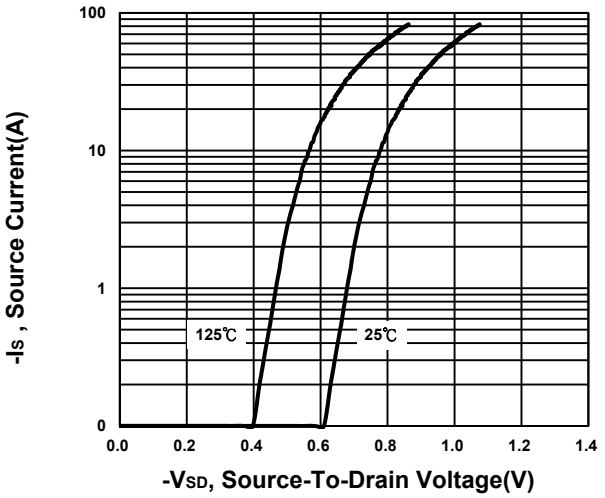
Capacitance Characteristic



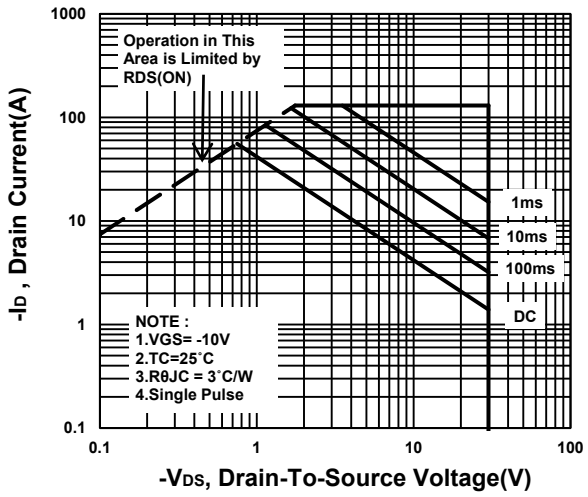
Gate charge Characteristics



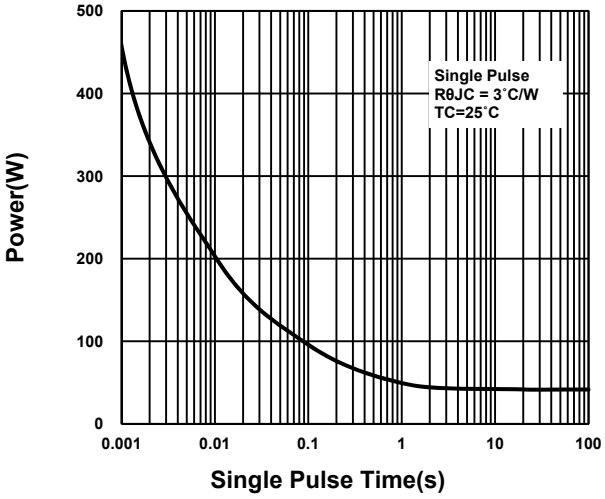
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve