NIKO-SEM

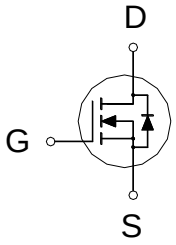
N-Channel Logic Level Enhancement Mode Field Effect Transistor

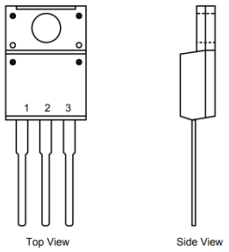
P1625EF
TO-220F
Halogen-Free & Lead-Free

RoHS Compliant

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
250V	265mΩ	16A





1. GATE
2. DRAIN
3. SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	250	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	16	A
	T_C = 100 °C		10	
Pulsed Drain Current[1]		I_{DM}	30	
Avalanche Current		I_{AS}	7.3	
Avalanche Energy	L = 1mH	E_{AS}	27	mJ
Power Dissipation	T_C = 25 °C	P_D	35	W
	T_C = 100 °C		14	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3.6	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	°C / W

[1]Pulse width limited by maximum junction temperature.

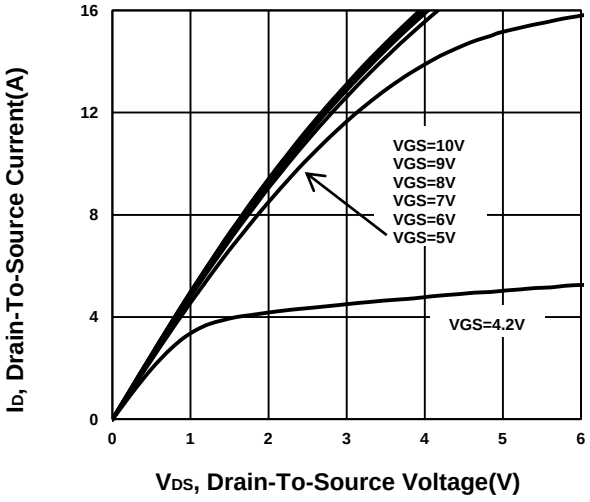
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	250			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	2.8	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA

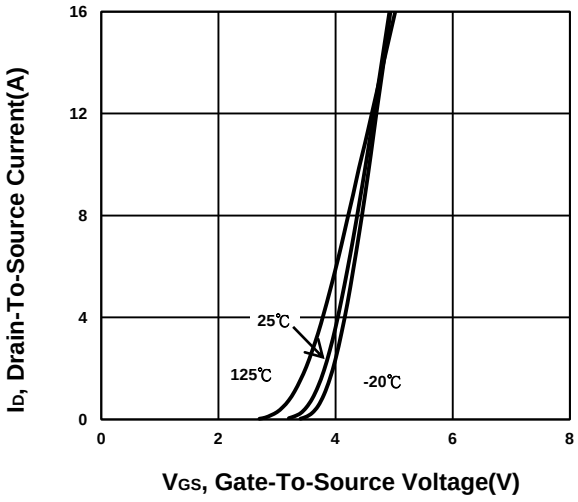
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 250V, V_{GS} = 0V			1	μA
		V_{DS} = 250V, V_{GS} = 0V, T_J = 55 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 8A		205	265	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 8A		13		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 125V, f = 1MHz		734		pF
Output Capacitance	C_{oss}			63		
Reverse Transfer Capacitance	C_{rss}			14		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V ,f = 1MHz		6		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 125V, V_{GS} = 10V, I_D = 8A		20		nC
Gate-Source Charge[2]	Q_{gs}			4.1		
Gate-Drain Charge[2]	Q_{gd}			6.6		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 125V, $I_D \cong$ 8A, V_{GS} = 10V, R_{GEN} = 6Ω		22		nS
Rise Time[2]	t_r			33		
Turn-Off Delay Time[2]	$t_{d(off)}$			136		
Fall Time[2]	t_f			53		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				16	A
Forward Voltage[1]	V_{SD}	I_F = 16A,V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 8A, dI_F/dt = 100A / μS		127		nS
Reverse Recovery Charge	Q_{rr}			588		nC

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

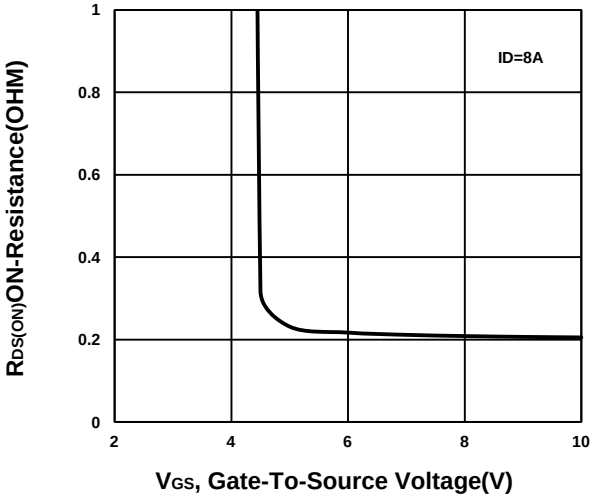
Output Characteristics



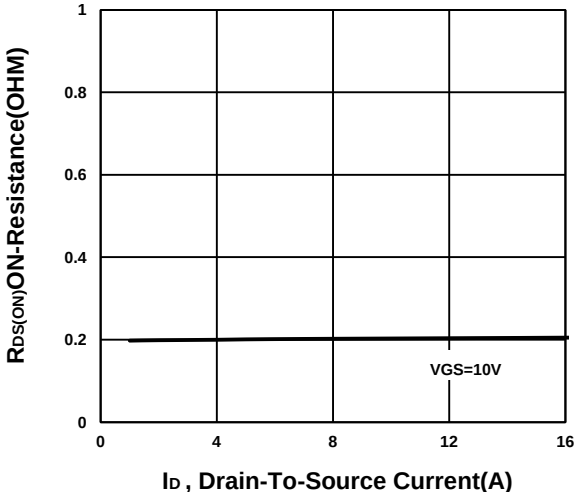
Transfer Characteristics



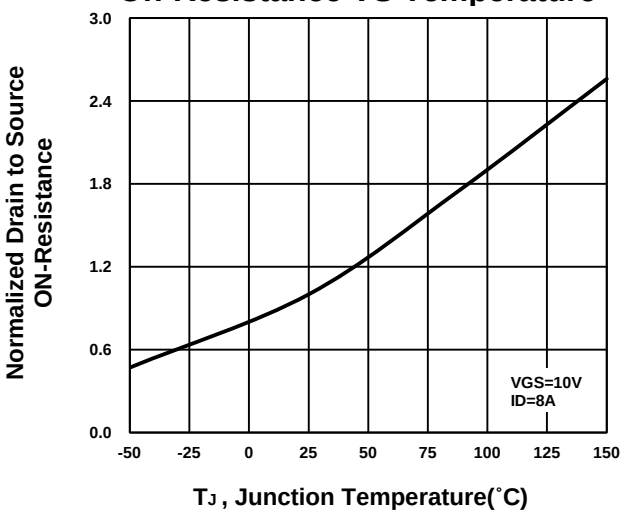
On-Resistance VS Gate-To-Source Voltage



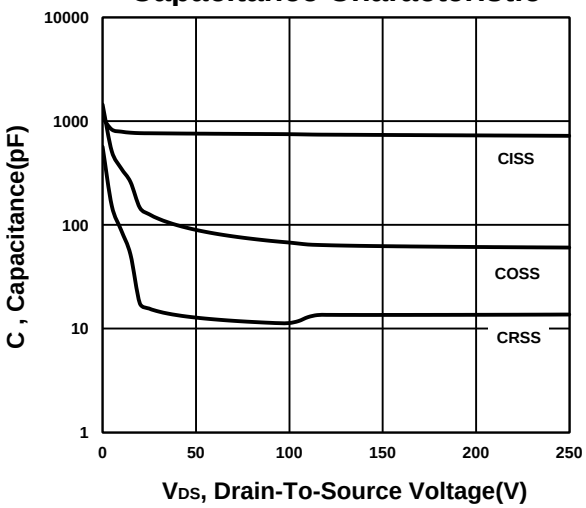
On-Resistance VS Drain Current



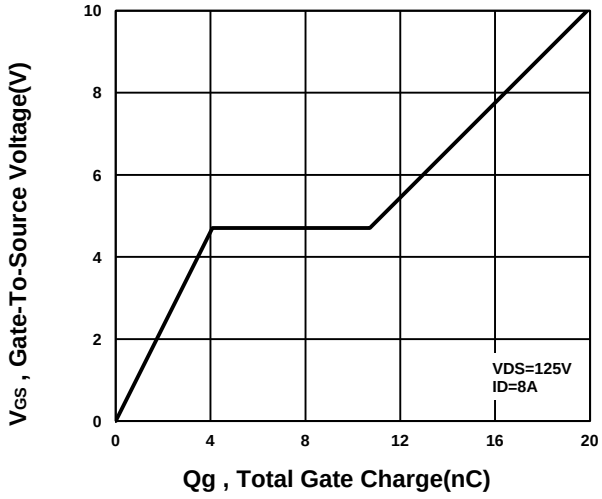
On-Resistance VS Temperature



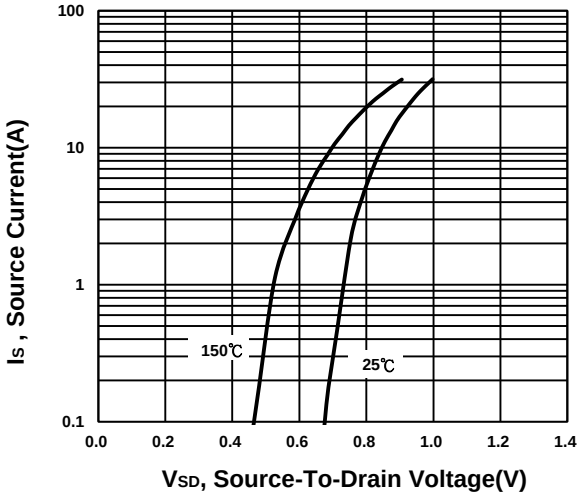
Capacitance Characteristic



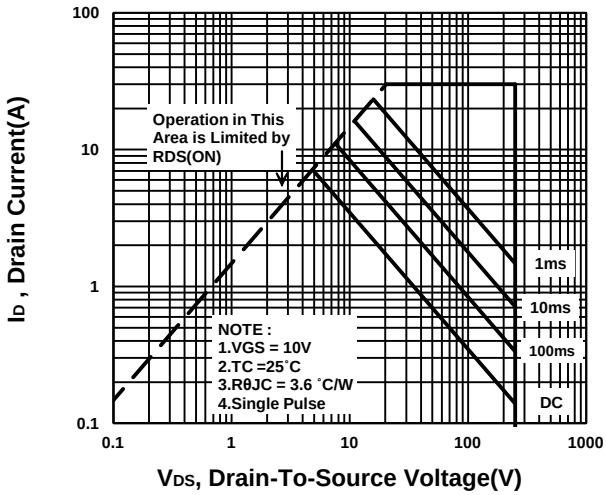
Gate charge Characteristics



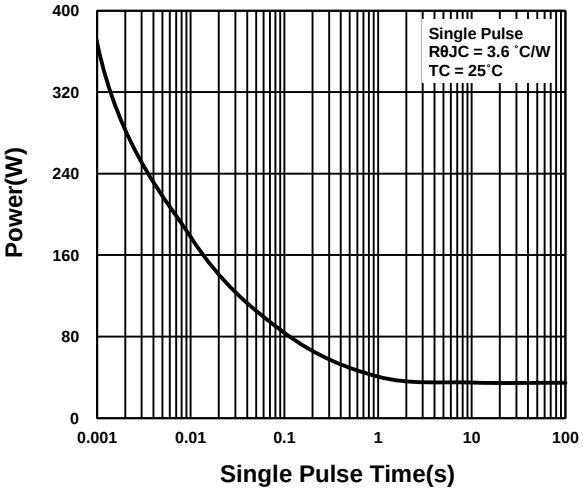
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve