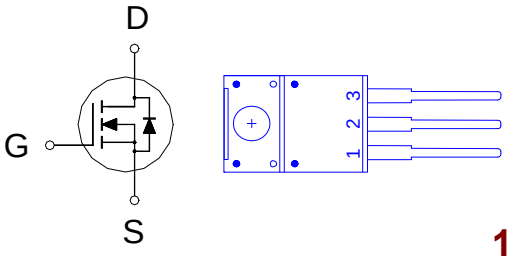
NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

P1350ETF:TO-220F
P1350ETFS:TO-220FS
Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
500V	0.52Ω	13A



1. GATE
2. DRAIN
3. SOURCE

100% UIS tested

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	500	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current[2]	T_C = 25 °C	I_D	13	A
	T_C = 100 °C		8	
Pulsed Drain Current[1, 2]		I_{DM}	45	
Avalanche Current[3]		I_{AS}	4	
Avalanche Energy[3]		E_{AS}	80	mJ
Power Dissipation	T_C = 25 °C	P_D	39	W
	T_C = 100 °C		15	
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	$R_{\theta JC}$		3.2	°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]V_{DD} = 50V , L = 10mH ,starting ,T_J = 25°C

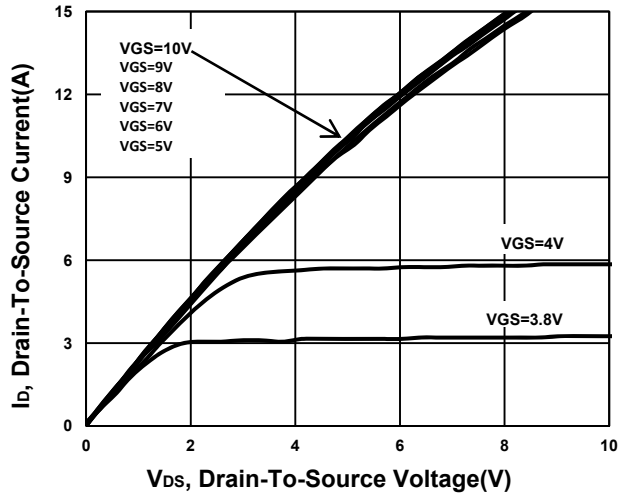
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	500			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	2.6	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Gate Voltage Drain Current	I_{DSS}	V_{DS} = 500V, V_{GS} = 0V , T_C = 25 °C			1	μA
		V_{DS} = 400V, V_{GS} = 0V , T_C = 100 °C			10	

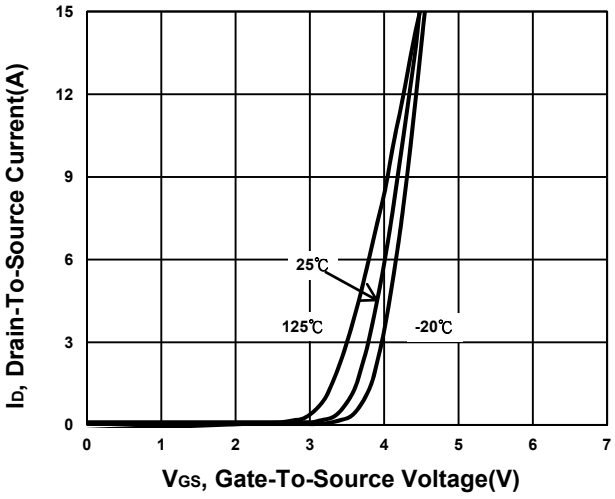
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 6.5A		0.417	0.52	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 6.5A		16		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		1572		pF
Output Capacitance	C_{oss}			159		
Reverse Transfer Capacitance	C_{rss}			13		
Total Gate Charge[2]	Q_g	V_{DD} = 400V, I_D = 13A, V_{GS} = 10V		39		nC
Gate-Source Charge[2]	Q_{gs}			6.5		
Gate-Drain Charge[2]	Q_{gd}			12.4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 250V, I_D = 13A, R_G= 4.7Ω		30		nS
Rise Time[2]	t_r			60		
Turn-Off Delay Time[2]	$t_{d(off)}$			80		
Fall Time[2]	t_f			65		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J= 25 °C)						
Continuous Current[3]	I_S				13	A
Forward Voltage[1]	V_{SD}	I_F =13A, V_{GS} = 0V			1.7	V
Reverse Recovery Time	t_{rr}	I_F = 13A, dI_F/dt = 100A / μS		326		nS
Reverse Recovery Charge	Q_{rr}			4.1		uC

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

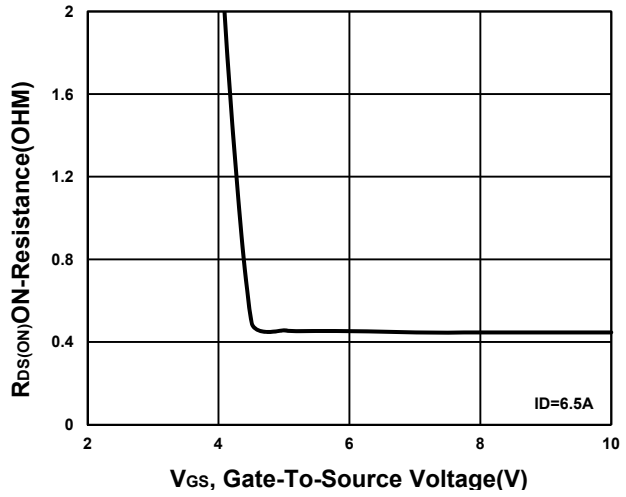
Output Characteristics



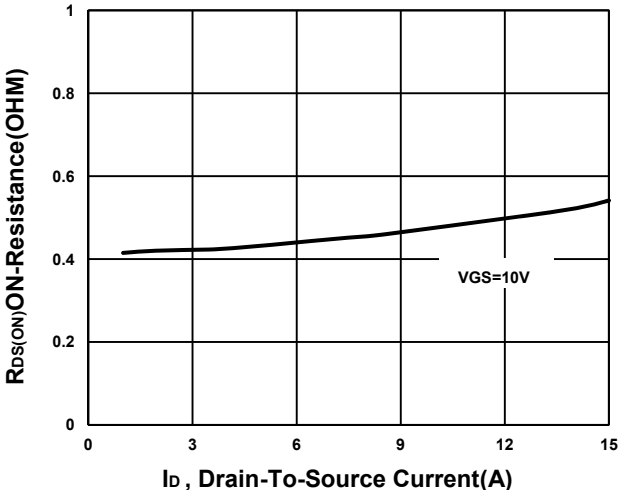
Transfer Characteristics



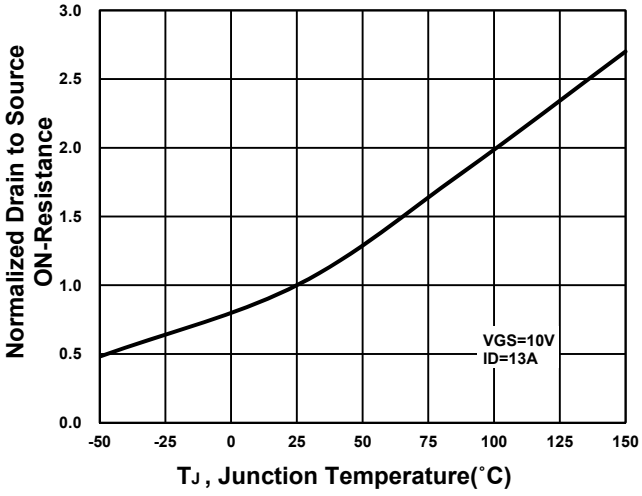
On-Resistance VS Gate-To-Source



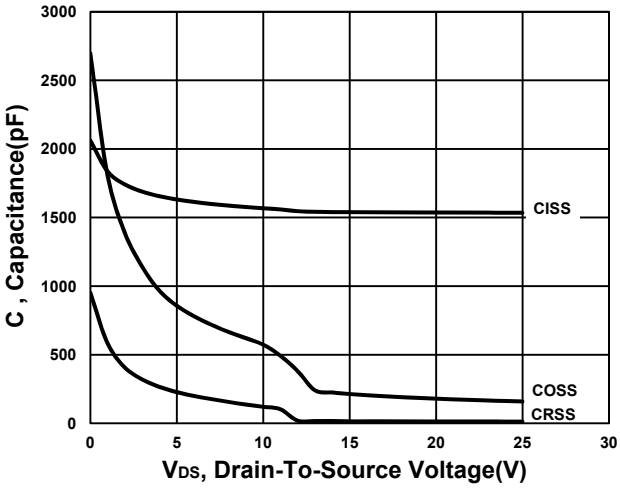
On-Resistance VS Drain Current



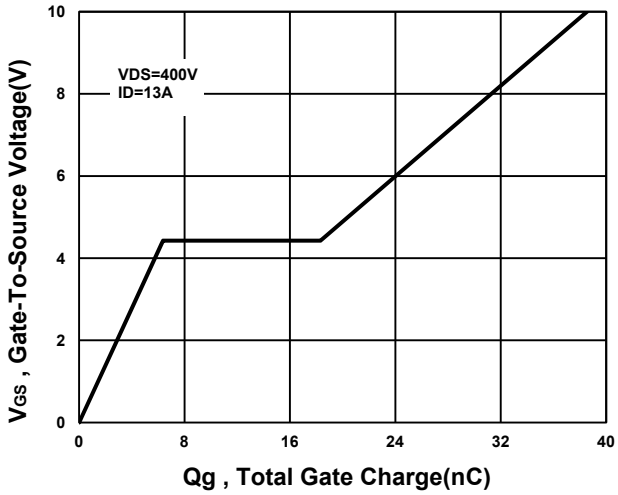
On-Resistance VS Temperature



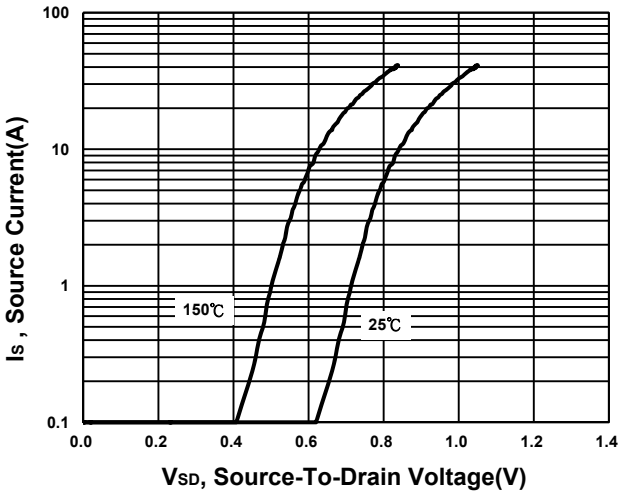
Capacitance Characteristic



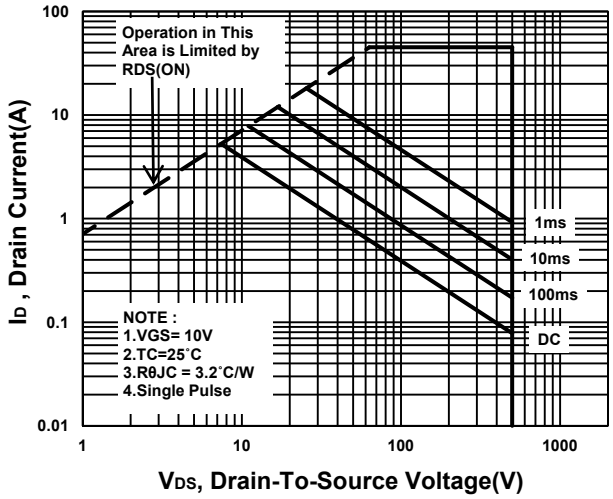
Gate charge Characteristics



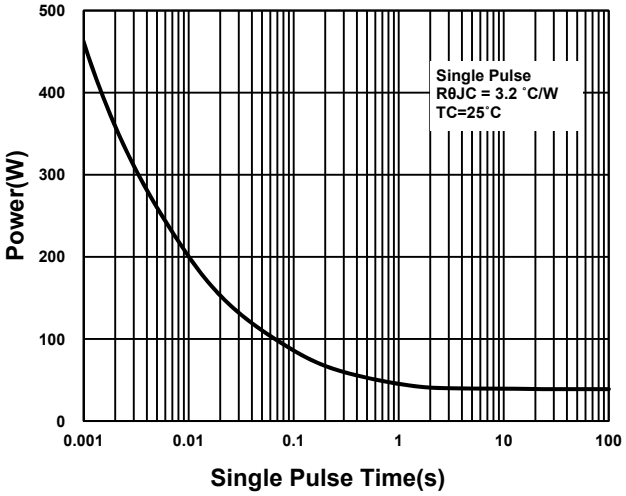
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve