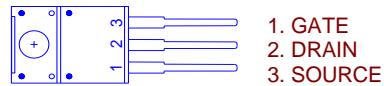
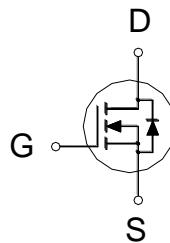


NIKO-SEM**N-Channel High Voltage Mode
Field Effect Transistor****P1160ZTF:TO-220F
P1160ZTFS:TO-220FS
Halogen-Free & Lead-Free****PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
600V	390mΩ	11A

**ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ Unless Otherwise Noted)**

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ²	I_D	11	A
		7	
Pulsed Drain Current ¹	I_{DM}	40	
Avalanche Current ³	I_{AS}	3	A
Avalanche Energy ³	E_{AS}	180	mJ
Power Dissipation	P_D	39	W
		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	°C / W

¹Pulse width limited by maximum junction temperature.²Ensure that the channel temperature does not exceed 150°C.³ $V_{DD} = 50V$, $L = 40mH$, starting $T_J = 25^\circ C$.**ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ C$, Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	600			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3.2	4	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 30V$			± 100	nA
Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 600V, V_{GS} = 0V, T_C = 25^\circ C$			1	μA
		$V_{DS} = 480V, V_{GS} = 0V, T_C = 100^\circ C$			100	

NIKO-SEM**N-Channel High Voltage Mode
Field Effect Transistor****P1160ZTF:TO-220F
P1160ZTFS:TO-220FS
Halogen-Free & Lead-Free**

Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 5.5A$	347	390	$m\Omega$
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 5.5A$	8		S
DYNAMIC					
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$	870		pF
Output Capacitance	C_{oss}		665		
Reverse Transfer Capacitance	C_{rss}		8		
Effective Output Capacitance ⁴	$C_{o(er)}$	$V_{GS} = 0V, V_{DS} = 0$ to $480V$	79		
Total Gate Charge ²	Q_g	$V_{DD} = 480V, I_D = 5.5A, V_{GS} = 10V$	30		nC
Gate-Source Charge ²	Q_{gs}		5		
Gate-Drain Charge ²	Q_{gd}		15		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 300V, I_D = 5.5A, R_G = 10\Omega$	27		nS
Rise Time ²	t_r		65		
Turn-Off Delay Time ²	$t_{d(off)}$		73		
Fall Time ²	t_f		37		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$)					
Continuous Current ³	I_S			11	A
Forward Voltage ¹	V_{SD}	$I_F = 5.5A, V_{GS} = 0V$		1.5	V
Reverse Recovery Time	t_{rr}	$I_F = 5.5A, dI_F/dt = 100A / \mu S$	302		nS
Reverse Recovery Charge	Q_{rr}		3.6		uC

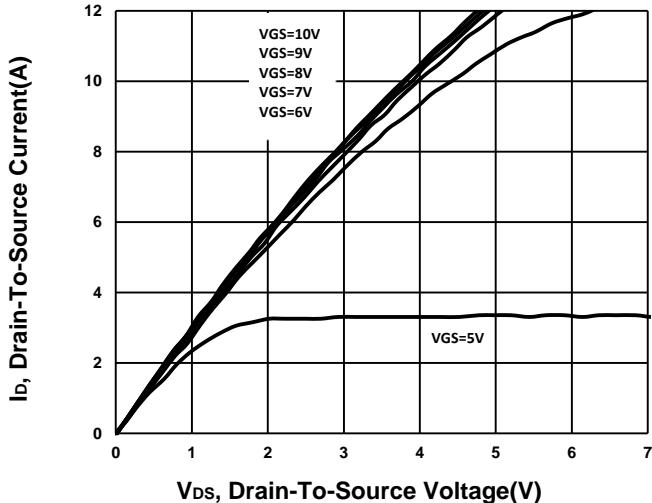
¹Pulse test : Pulse Width $\leq 380 \mu sec$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.³Pulse width limited by maximum junction temperature.⁴ $C_{o(er)}$ is a fixed capacitance that gives the same stored energy as C_{oss} while V_{DS} is rising from 0 to 80% $V_{(BR)DSS}$.

NIKO-SEM

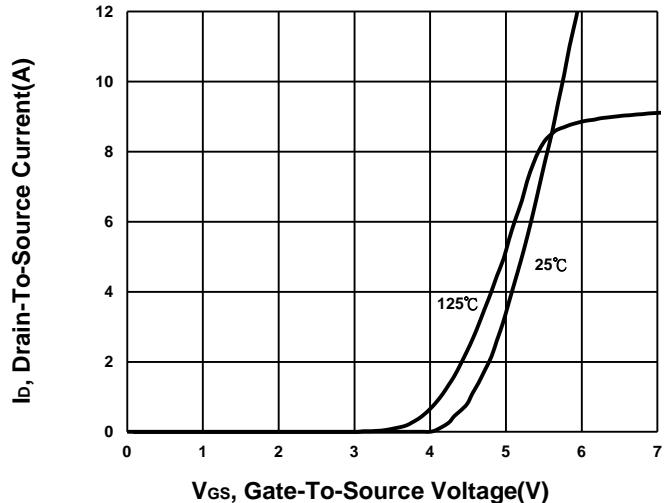
**N-Channel High Voltage Mode
Field Effect Transistor**

**P1160ZTF:TO-220F
P1160ZTFS:TO-220FS
Halogen-Free & Lead-Free**

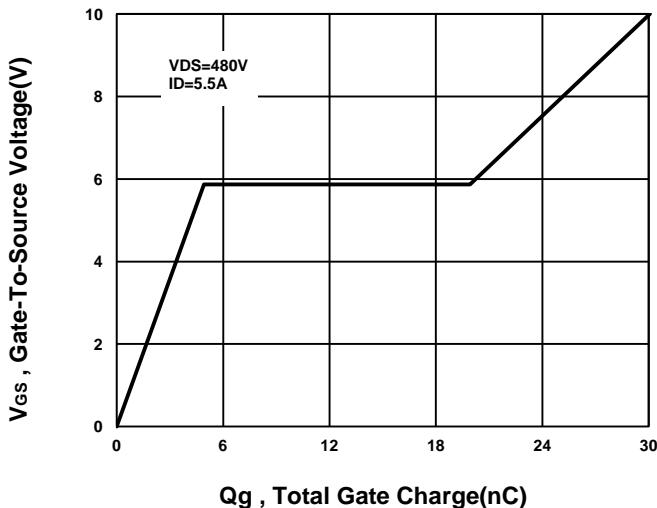
Output Characteristics



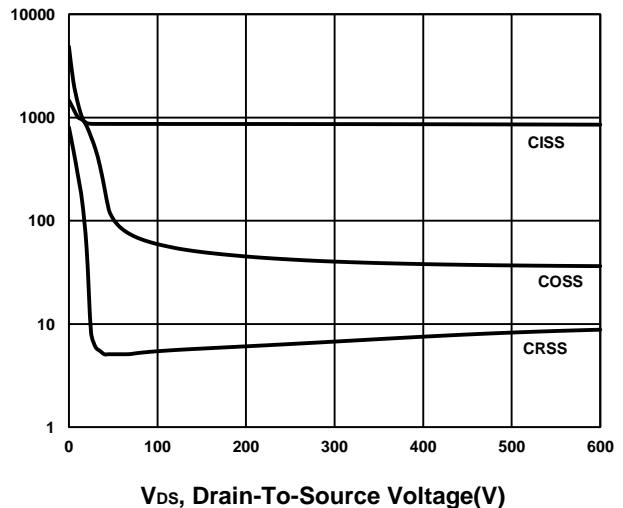
Transfer Characteristics



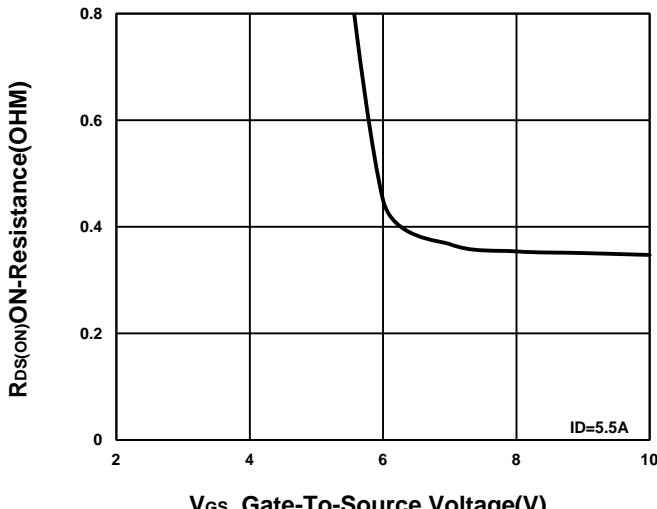
Gate charge Characteristics



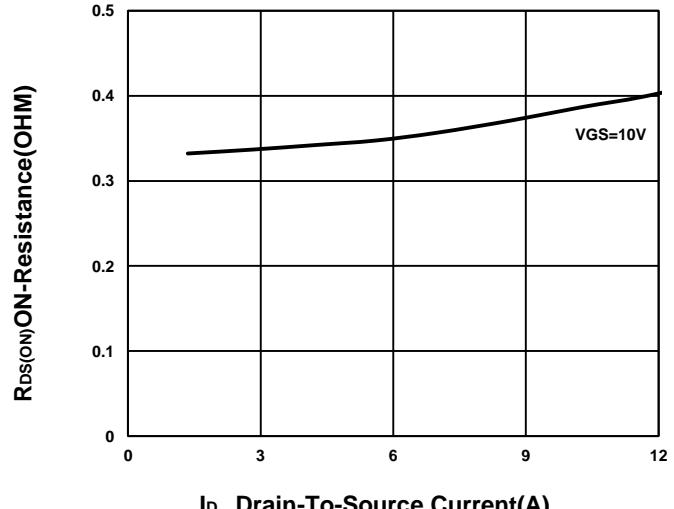
Capacitance Characteristic



On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



NIKO-SEM**N-Channel High Voltage Mode
Field Effect Transistor****P1160ZTF:TO-220F
P1160ZTFS:TO-220FS
Halogen-Free & Lead-Free**