NIKO-SEM

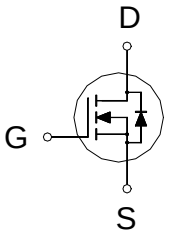
N-Channel Enhancement Mode Field Effect Transistor

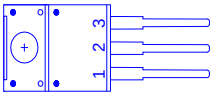
P0270ATF(S)

TO-220F:P0270ATF
TO-220FS:P0270ATFS
Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
700V	6.3Ω	2A





1. GATE
2. DRAIN
3. SOURCE

RoHS Compliant

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current[2]	T_C = 25 °C	I_D	2	A
	T_C = 100 °C		1	
Pulsed Drain Current[1]		I_{DM}	8	
Avalanche Energy[3]		E_{AS}	5	mJ
Power Dissipation	T_C = 25 °C	P_D	26	W
	T_C = 100 °C		10	
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	$R_{\theta JC}$		4.7	°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

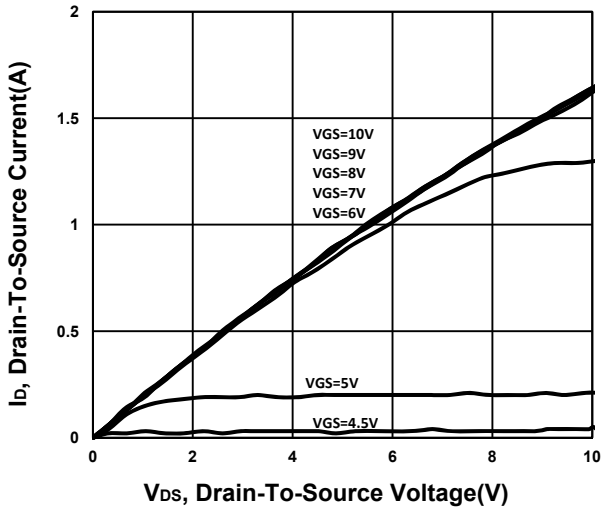
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	700			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5	3.8	4.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 700V, V_{GS} = 0V			25	μA
		V_{DS} = 560V, V_{GS} = 0V, T_J = 125 °C			250	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 1A		5.5	6.3	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 1A		1.5		S

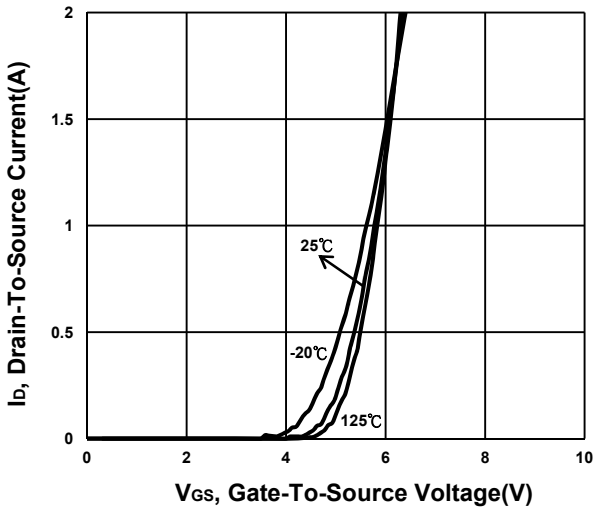
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		333		pF
Output Capacitance	C_{oss}			42		
Reverse Transfer Capacitance	C_{rss}			11		
Total Gate Charge[2]	Q_g	V_{DS} =560V, V_{GS} = 10V, I_D = 2A		6.5		nC
Gate-Source Charge[2]	Q_{gs}			2		
Gate-Drain Charge[2]	Q_{gd}			1.5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 350V, $I_D \cong$ 2A, V_{GS} = 10V, R_{GS} = 25Ω		30		nS
Rise Time[2]	t_r			80		
Turn-Off Delay Time[2]	$t_{d(off)}$			50		
Fall Time[2]	t_f			70		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				2	A
Forward Voltage[1]	V_{SD}	I_F = 2A, V_{GS} = 0V			1.5	V
Reverse Recovery Time	t_{rr}	Is = 2A, dI_S/dt=100A/us		356		nS
Reverse Recovery Charge	Q_{rr}			1.2		μC

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

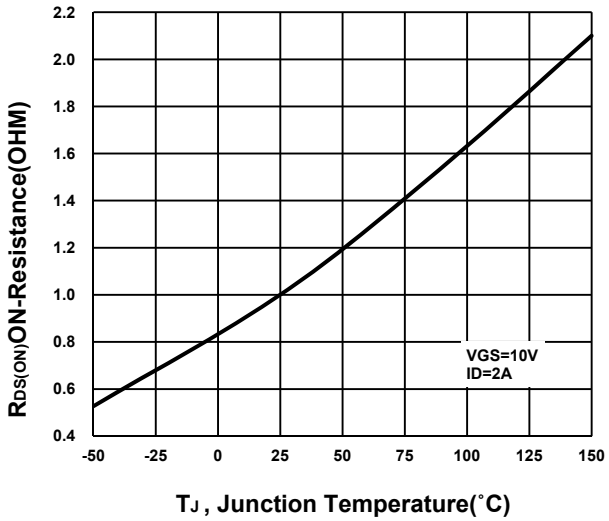
Output Characteristics



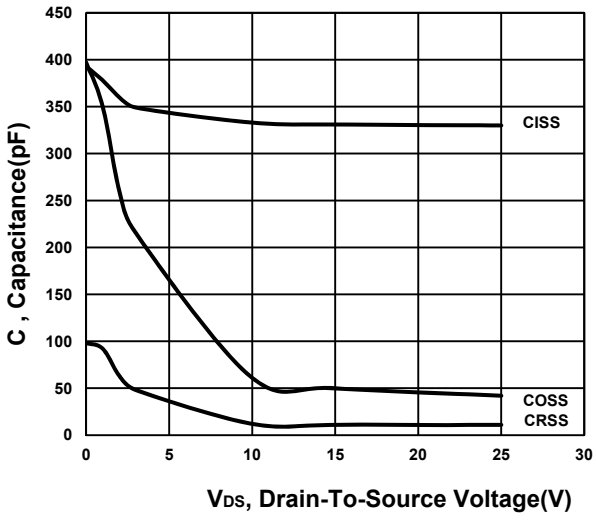
Transfer Characteristics



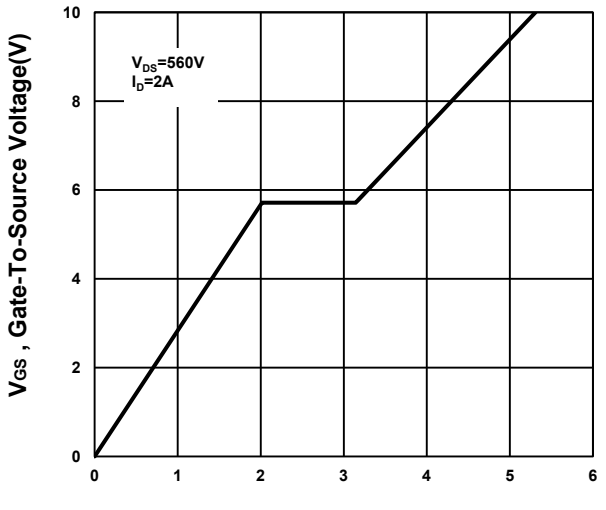
On-Resistance VS Temperature



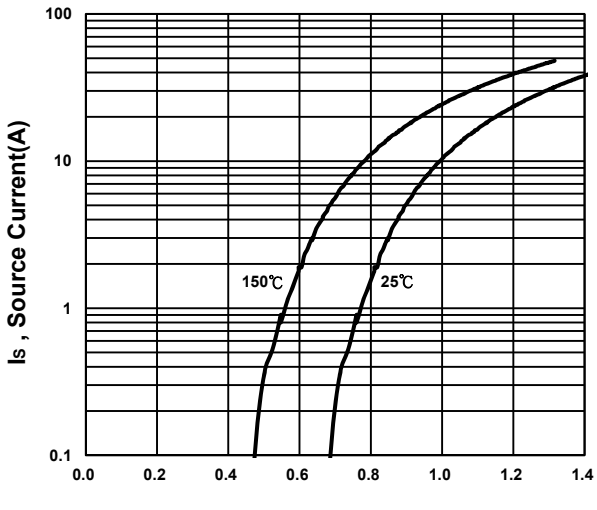
Capacitance Characteristic



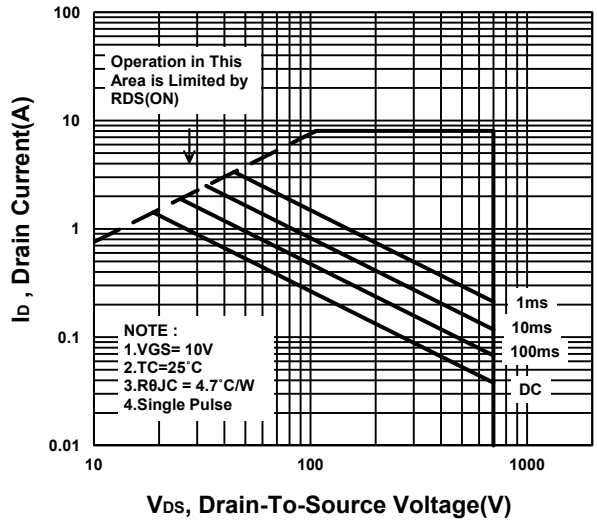
Gate charge Characteristics



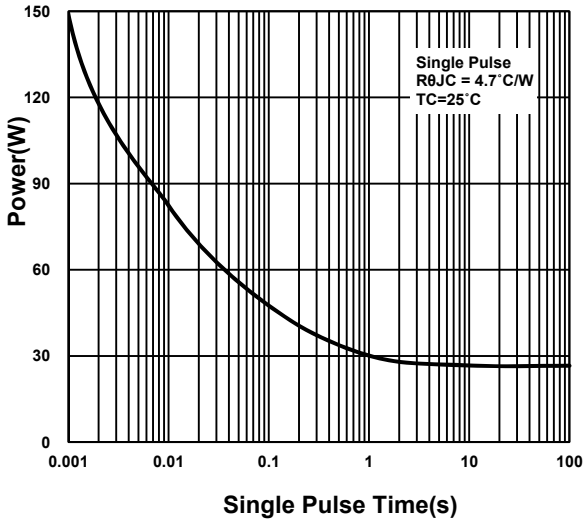
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve