NIKO-SEM

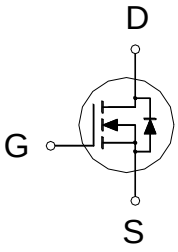
N-Channel Enhancement Mode Field Effect Transistor

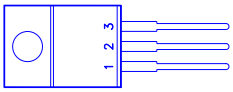
P1010AT
TO-220
Halogen-Free & Lead-Free

RoHS Compliant

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	10.5mΩ	69A





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}	100	V
Gate-Source Voltage		V_{GS}	±25	V
Continuous Drain Current	T_C = 25 ° C	I_D	69	A
	T_C = 100 ° C		49	
Pulsed Drain Current[1]		I_{DM}	200	
Avalanche Current		I_{AS}	23	
Avalanche Energy	L = 1mH	E_{AS}	264	mJ
Power Dissipation	T_C = 25 ° C	P_D	115	W
	T_C = 100 ° C		58	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 175	° C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		1.3	° C / W
Junction-to-Ambient	$R_{\theta JA}$		50	

[1]Pulse width limited by maximum junction temperature.

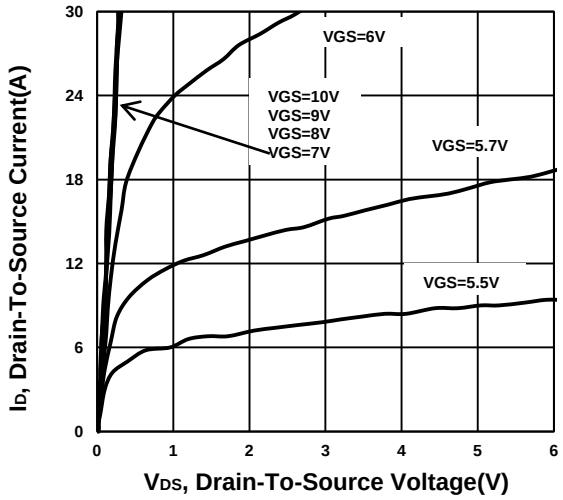
ELECTRICAL CHARACTERISTICS (T_J = 25 ° C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5	3.5	4.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±25V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V, V_{GS} = 0V			1	μA
		V_{DS} = 80V, V_{GS} = 0V, T_J = 125 ° C			10	

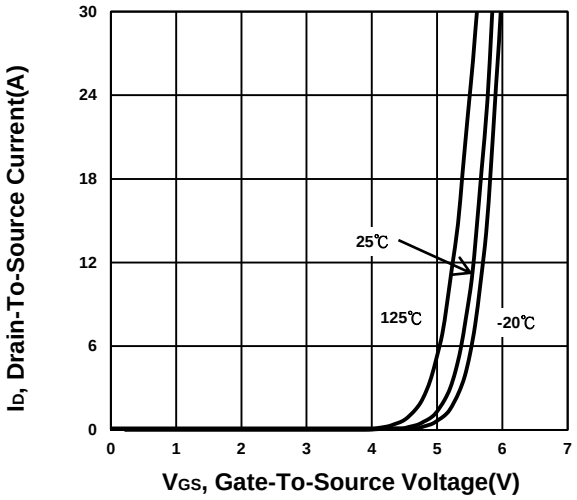
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 20A		8.2	10.5	mΩ
		V_{GS} = 7V, I_D = 20A		9.9	13.5	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A		57		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		4863		pF
Output Capacitance	C_{oss}			375		
Reverse Transfer Capacitance	C_{rss}			297		
Gate Resistance	Rg	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		0.8		Ω
Total Gate Charge[2]	Q_g V_{GS} = 10V	V_{DS} =50V,I_D = 20A		101		nC
	Q_g V_{GS} = 7V			76		
Gate-Source Charge[2]	Q_{gs}			28		
Gate-Drain Charge[2]	Q_{gd}			39		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 50V, $I_D \cong$ 20A, V_{GS} = 10V, R_{GEN} =6Ω		41		nS
Rise Time[2]	t_r			99		
Turn-Off Delay Time[2]	$t_{d(off)}$			93		
Fall Time[2]	t_f			64		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				63	A
Forward Voltage[1]	V_{SD}	I_F = 20A , V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 20A , dI_F/dt= 100A/μs		46		nS
Reverse Recovery Charge	Q_{rr}			69		nC

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

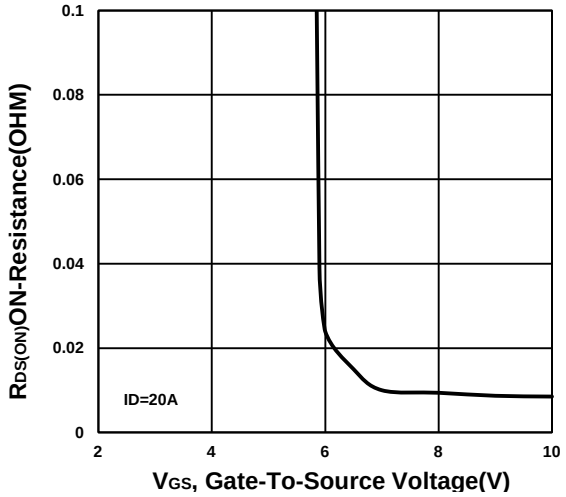
Output Characteristics



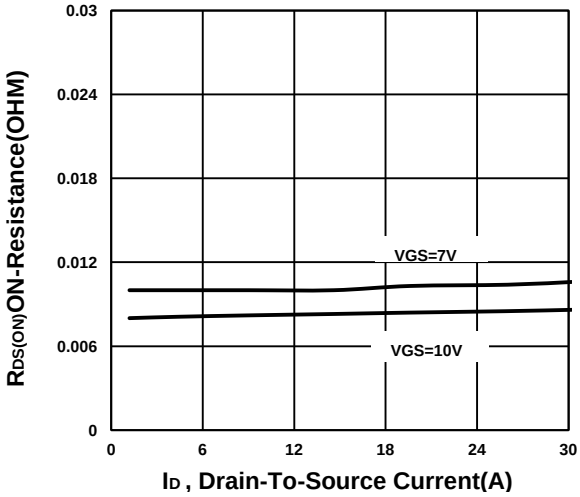
Transfer Characteristics



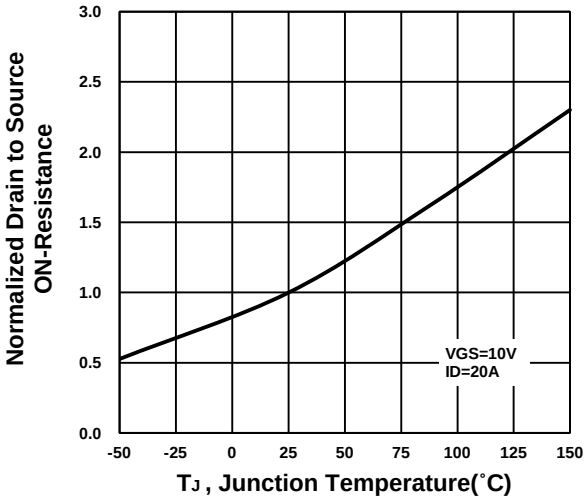
On-Resistance VS Gate-To-Source



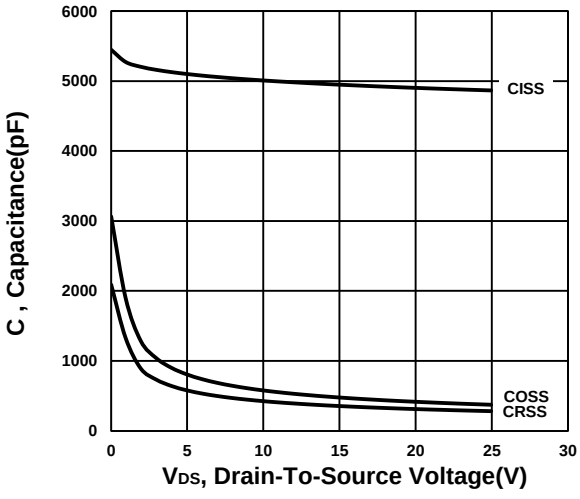
On-Resistance VS Drain Current



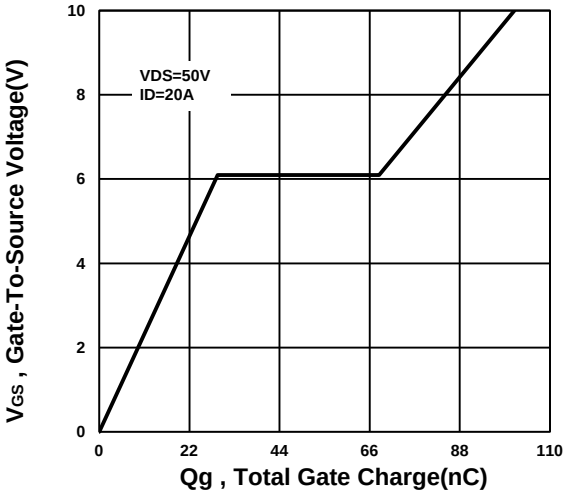
On-Resistance VS Temperature



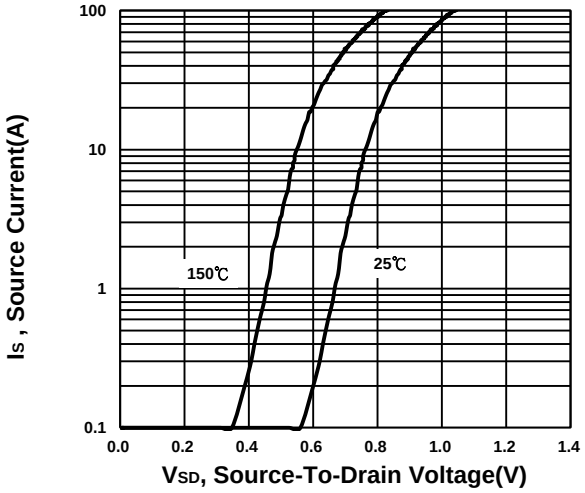
Capacitance Characteristic



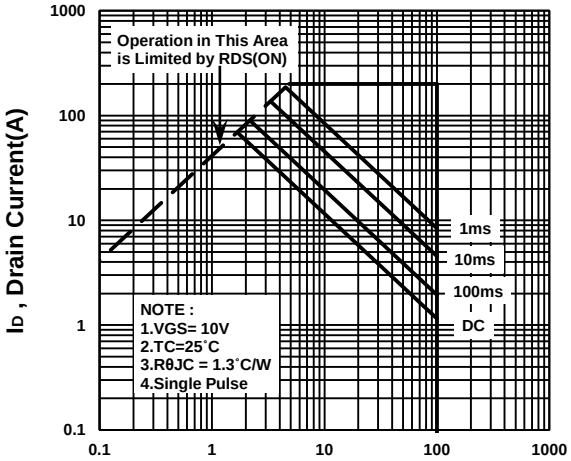
Gate charge Characteristics



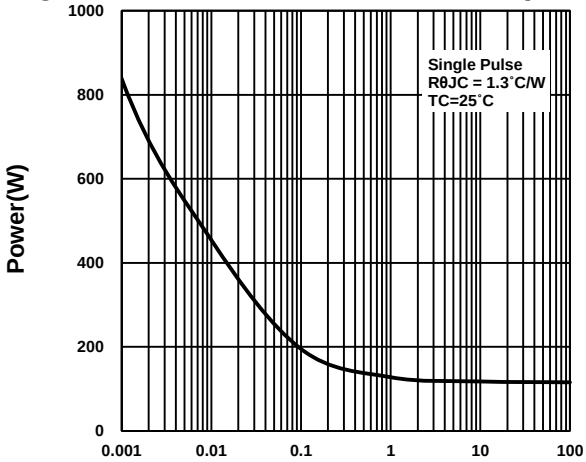
Source-Drain Diode Forward Voltage



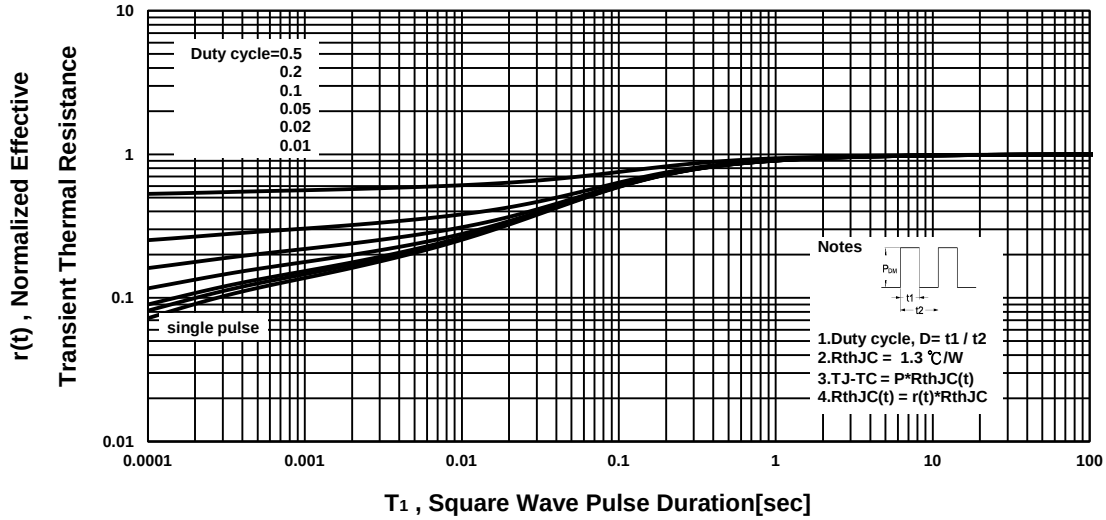
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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