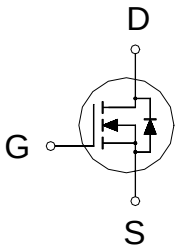
NIKO-SEM

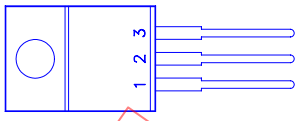
N-Channel Enhancement Mode Field Effect Transistor

P1308ATG
TO-220
Lead Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
75	13mΩ	80A





1. GATE
2. DRAIN
3. SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	80	A
	T_C = 100 °C		55	
Pulsed Drain Current[1]		I_{DM}	250	
Avalanche Current		I_{AR}	40	
Avalanche Energy	L = 0.55mH	E_{AS}	400	mJ
Repetitive Avalanche Energy[2]	L = 0.1mH	E_{AR}	20	
Power Dissipation	T_C = 25 °C	P_D	192	W
	T_C = 100 °C		76	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	275	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		0.65	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	
Case-to-Heatsink	$R_{\theta CS}$	0.5		

[1]Pulse width limited by maximum junction temperature.
[2]Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS (T_C = 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	75			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.5	2.3	4.0	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V			1	μA
		V_{DS} = 60V, V_{GS} = 0V, T_J = 125 °C			10	

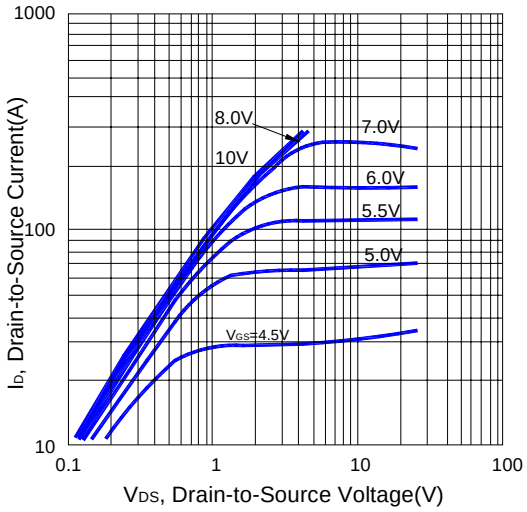
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 10V, V_{GS} = 10V	60			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 40A		10.5	13	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = 50V, I_D = 40A		38		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		3820		pF
Output Capacitance	C_{oss}			610		
Reverse Transfer Capacitance	C_{rss}			130		
Total Gate Charge[2]	Q_g	V_{DS} =60V, V_{GS} = 10V, I_D = 40A			160	nC
Gate-Source Charge[2]	Q_{gs}				30	
Gate-Drain Charge[2]	Q_{gd}				55	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 40V, $I_D \cong$ 40A, V_{GS} = 10V, R_{GS} = 2.5Ω		15		nS
Rise Time[2]	t_r			65		
Turn-Off Delay Time[2]	$t_{d(off)}$			50		
Fall Time[2]	t_f			50		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				80	A
Pulsed Current[3]	I_{SM}				250	
Forward Voltage[1]	V_{SD}	I_F = 40A, V_{GS} = 0V			1.3	V
Reverse Recovery Time	t_{rr}	$I_F = I_S$, dI_F/dt = 100A / μS		100		nS
Peak Reverse Recovery Current	$I_{RM(REC)}$			200		A
Reverse Recovery Charge	Q_{rr}			410		nC

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

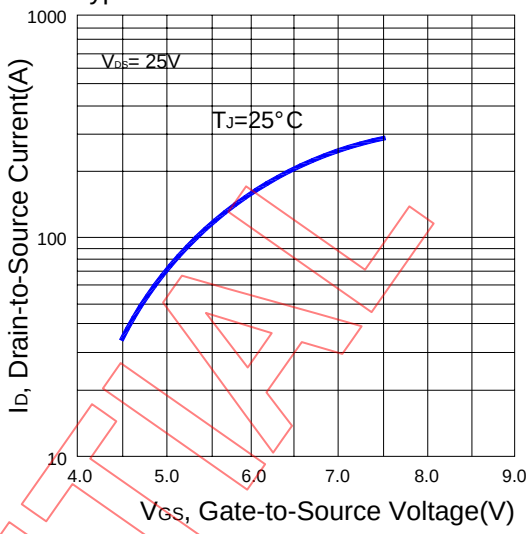
REMARK: THE PRODUCT MARKED WITH "P1308ATG", DATE CODE or LOT #

Orders for parts with Lead-Free plating can be placed using the PXXXXXXG parts name.

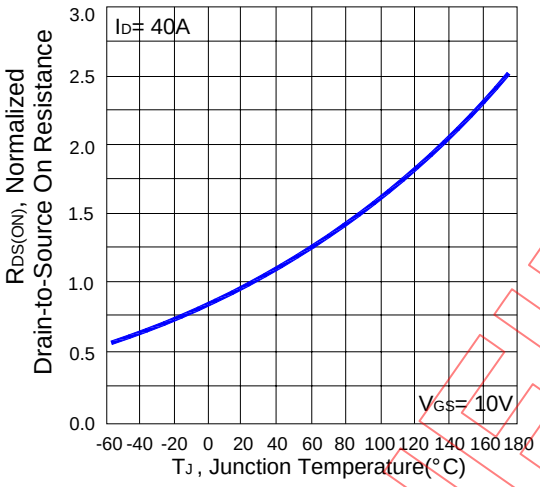
Typical Output Characteristics



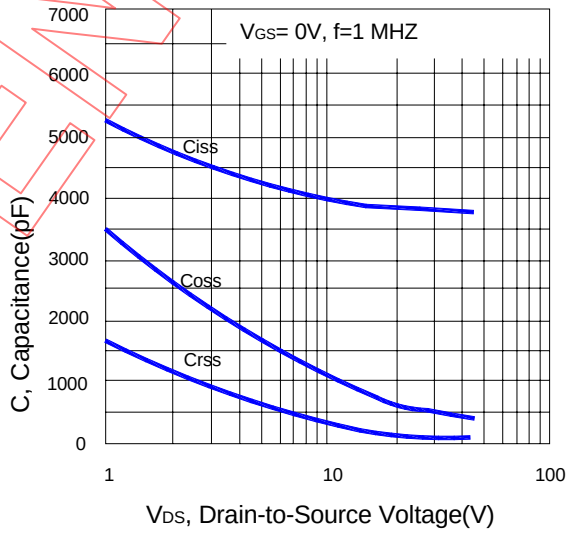
Typical Transfer Characteristics



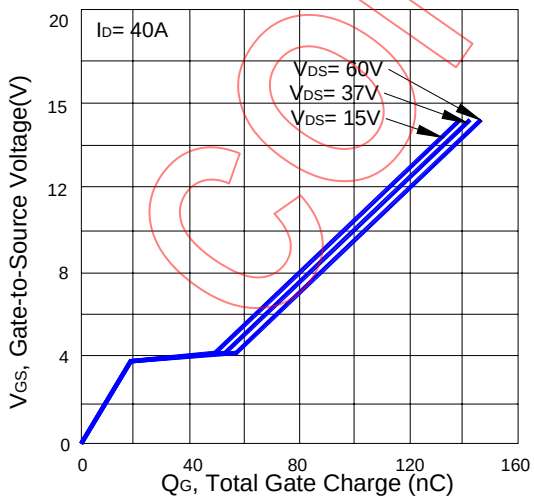
Normalized On-Resistance Vs.Temperature



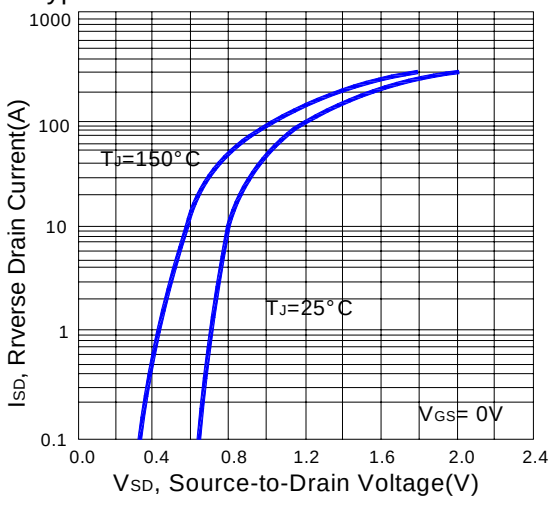
Capacitance-Characteristics



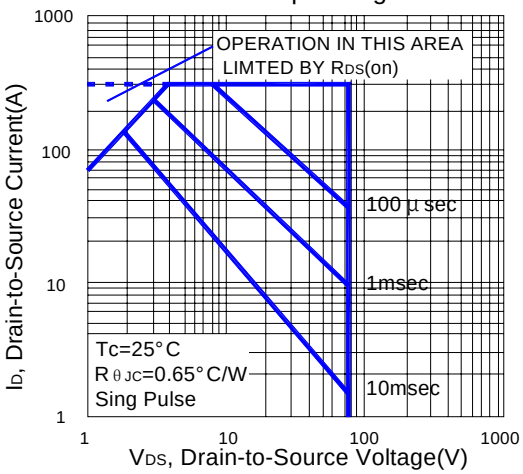
Typical Gate Charge Vs. Gate-to-Source Voltage



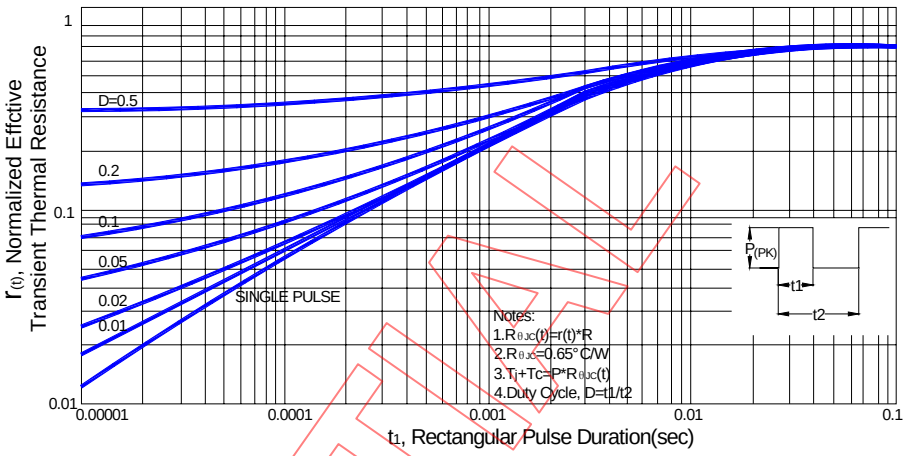
Typical Source-Drain Diode Forward Voltage



Maximum Safe Operating Area



Transient Thermal Respence Curre



TO-220 (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.78	10.16	10.54	H	2.4	2.54	2.68
B	2.61	2.74	2.87	I	1.19	1.27	1.35
C		20		J	4.4	4.6	4.8
D	28.5	28.9	29.3	K	1.14	1.27	1.4
E	14.6	15.0	15.4	L	2.3	2.6	2.9
F	8.4	8.8	9.2	M	0.26	0.46	0.66
G	0.72	0.8	0.88	N		7°