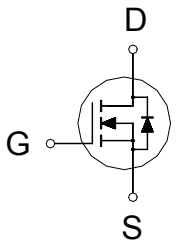
NIKO-SEM

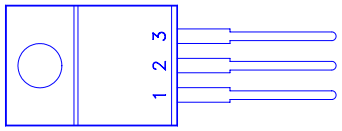
N-Channel Logic Level Enhancement Mode Field Effect Transistor

P03N60T
TO-220

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
600 V	5.5Ω	1.2A





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	1.2	A
	T_C = 100 °C		0.75	
Pulsed Drain Current[1]		I_{DM}	4.5	
Avalanche Current		I_{AR}	1.5	
Avalanche Energy	L = 0.1mH	E_{AS}	240	mJ
Repetitive Avalanche Energy[2]	L = 0.05mH	E_{AR}	3.2	
Power Dissipation	T_C = 25 °C	P_D	65	W
	T_C = 100 °C		33	
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	$R_{\theta JC}$		3	°C / W
Junction-to-Ambient	$R_{\theta JA}$		70	
Case-to-Heatsink	$R_{\theta CS}$	0.7		

[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 MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	600			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2		4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 600V, V_{GS} = 0V			250	μA
		V_{DS} = 480V, V_{GS} = 0V, T_J = 125 °C			1000	

On-State Drain Current[1]	$I_{D(ON)}$	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$max, V_{GS} = 10V	1.2			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 1A		5.5	6	Ω
Forward Transconductance[1]	g_{fs}	$V_{DS} \geq$ 100V, I_D = 1A	2.4	3.6		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		630		pF
Output Capacitance	C_{oss}			80		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, $I_D \cong$ 1.5A		21	31	nC
Gate-Source Charge[2]	Q_{gs}			3.0	11.6	
Gate-Drain Charge[2]	Q_{gd}			11	17	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 300V, R_L = 82Ω $I_D \cong$ 1.5A, V_{GS} = 10V, R_{GS} = 12Ω		11	17	nS
Rise Time[2]	t_r			13	20	
Turn-Off Delay Time[2]	$t_{d(off)}$			35	53	
Fall Time[2]	t_f			14	21	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
Continuous Current	I_S				1.2	A
Pulsed Current[3]	I_{SM}				4.5	
Forward Voltage[1]	V_{SD}	$I_F = I_S$, V_{GS} = 0V			1.6	V
Reverse Recovery Time	t_{rr}	$I_F = I_S$, dI_F/dt = 100A / μS		0	810	nS
Reverse Recovery Charge	Q_{rr}			2	4.2	μC

[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 "P03N60T", DATE CODE or LOT #

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°