

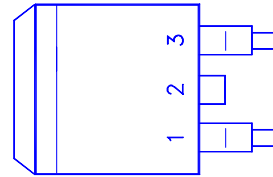
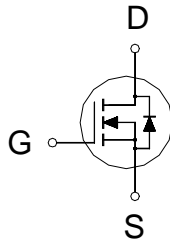
NIKO-SEM

**N-Channel Logic Level Enhancement
Mode Field Effect Transistor**

**P3056LS
TO-263**

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
25	50mΩ	12A



1. GATE
2. DRAIN
3. SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ °C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	$T_C = 25\text{ °C}$	I_D	12	A
	$T_C = 100\text{ °C}$		8	
Pulsed Drain Current ¹		I_{DM}	45	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	60	mJ
Repetitive Avalanche Energy ²	$L = 0.05\text{mH}$	E_{AR}	3	
Power Dissipation	$T_C = 25\text{ °C}$	P_D	43	W
	$T_C = 100\text{ °C}$		15	
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	$R_{\theta JC}$		2.6	°C / W
Junction-to-Ambient	$R_{\theta JA}$		60	
Case-to-Heatsink	$R_{\theta CS}$	0.6		

¹Pulse width limited by maximum junction temperature.

²Duty cycle ≤ 1%

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ °C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	25			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	1.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			25	μA
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 125\text{ °C}$			250	

On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 10V, V_{GS} = 10V$	12			A	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 5V, I_D = 12A$		70	120	m Ω	
		$V_{GS} = 10V, I_D = 12A$		50	90		
Forward Transconductance ¹	g_{fs}	$V_{DS} = 15V, I_D = 12A$		16		S	
DYNAMIC							
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		450		pF	
Output Capacitance	C_{oss}			200			
Reverse Transfer Capacitance	C_{rss}			60			
Total Gate Charge ²	Q_g	$V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = 10V, I_D = 6A$		15		nC	
Gate-Source Charge ²	Q_{gs}			2.0			
Gate-Drain Charge ²	Q_{gd}			7.0			
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 15V, R_L = 1\Omega, I_D \cong 12A, V_{GS} = 10V, R_{GS} = 2.5\Omega$		6.0		nS	
Rise Time ²	t_r			6.0			
Turn-Off Delay Time ²	$t_{d(off)}$			20			
Fall Time ²	t_f			5.0			
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_c = 25^\circ C$)							
Continuous Current	I_S				12	A	
Pulsed Current ³	I_{SM}				20		
Forward Voltage ¹	V_{SD}	$I_F = I_S, V_{GS} = 0V$			1.5	V	
Reverse Recovery Time	t_{rr}	$I_F = I_S, di_F/dt = 100A / \mu S$		30		nS	
Peak Reverse Recovery Current	$I_{RM(REC)}$				15		A
Reverse Recovery Charge	Q_{rr}				0.043		μC

¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

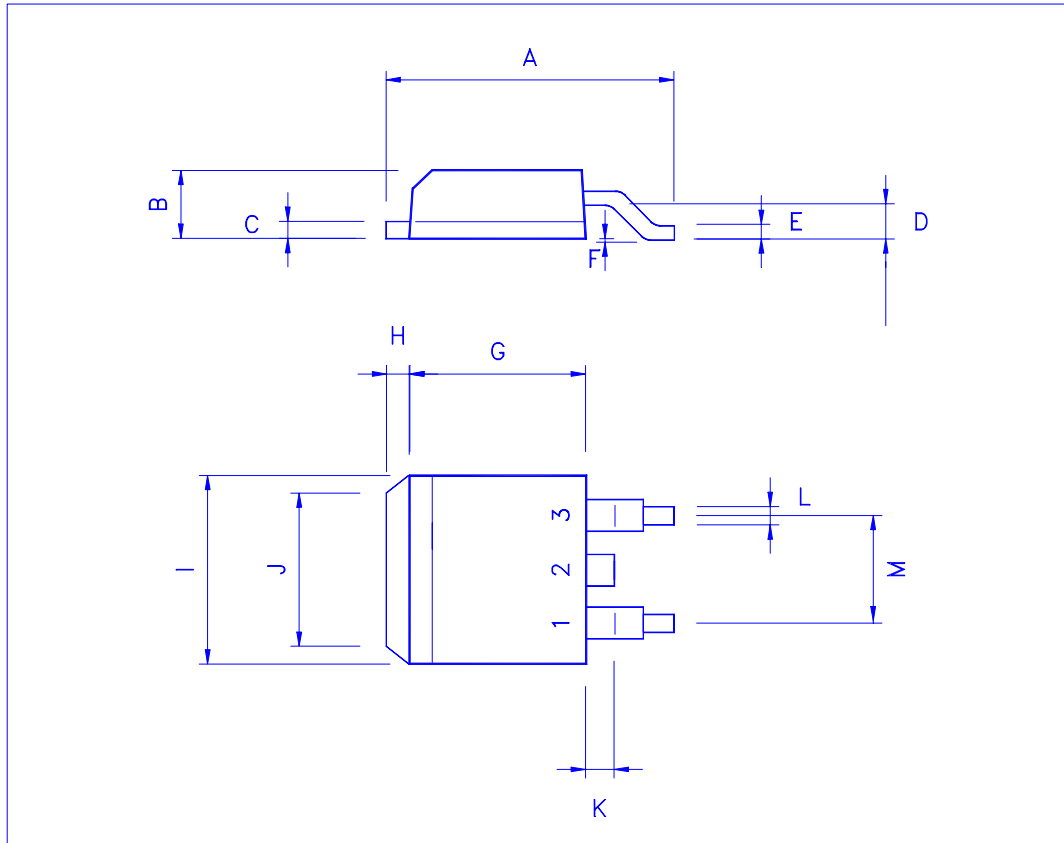
²Independent of operating temperature.

³Pulse width limited by maximum junction temperature.

REMARK: THE PRODUCT MARKED WITH "P3056LS", DATE CODE or LOT #

TO-263 (D²PAK) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	14.5	15	15.8	H	1.0	1.5	1.8
B	4.2		4.7	I	9.8		10.3
C	1.20		1.35	J		6.5	
D		2.8		K		1.5	
E	0.3	0.4	0.5	L	0.7		1.4
F	-0.102		0.203	M	4.83	5.08	5.33
G	8.5	9	9.5	N			



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