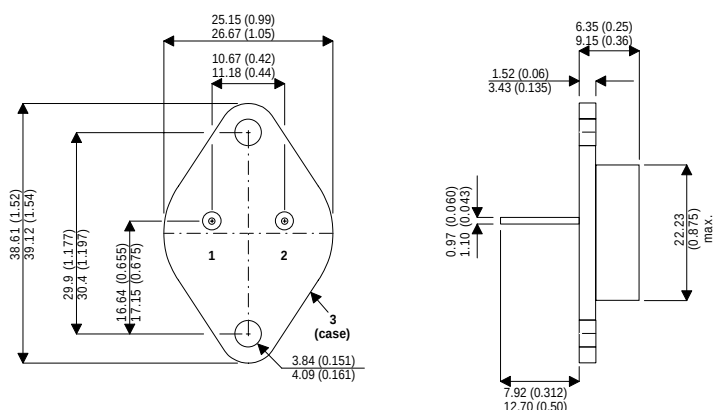


TO-3 (TO-204AA) Package Outline.
Dimensions in mm (inches)



Pin 1 – Gate Pin 2 – Source Case – Drain

**N-CHANNEL
ENHANCEMENT MODE
HIGH VOLTAGE
POWER MOSFET**

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

V_{DS}	Drain – Source Voltage ¹	200	V
V_{DGR}	Drain - Gate Voltage ($R_{GS} = 20K\Omega$) ¹	200	V
I_D	Continuous Drain Current@ $T_{case} = 25^{\circ}C$	9.0	A
I_D	Continuous Drain Current@ $T_{case} = 100^{\circ}C$	6.0	A
I_{DM}	Pulsed Drain Current ³	36	A
V_{GS}	Gate – Source Voltage	± 20	V
P_D	Maximum Power Dissipation @ $T_{case} = 25^{\circ}C$	75	W
	Derate Linearly	0.6	W/ $^{\circ}C$
I_{LM}	Inductive Current Clamped	36	A
E_{AS}^*	Single Pulse Avalanche energy Rating ⁴	150	mj
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	$^{\circ}C$
T_L	Lead Temperature : 0.063" from Case for 10 Sec.	300	$^{\circ}C$

THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			1.67	$^{\circ}C/W$
$R_{\theta CS}$	Case to Sink (Mounting Surface flat, smooth and greased.		0.1		
$R_{\theta JA}$	Junction to Ambient (Free air operation)			30	

NOTES

- $T_J = +25^{\circ}C$ to $+150^{\circ}C$
- Pulse Test PULSE Width $\leq 300\mu s$. Duty Cycle $\leq 2\%$
- Repetitive Ration Pulse Width Limited by Maximum Junction Temperature.
- $V_{DD} = 20V$ starting $T_J = +25^{\circ}C$, $L = 3.37mH$, $R_{GS} = 50\Omega$, $I_{PEAK} = 9A$

ELECTRICAL ($T_{case} = 25^{\circ}C$ unless otherwise stated)

Parameter		Test Conditions	Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS						
BV _{DSS}	Drain–Source Breakdown Voltage	V _{GS} = 0V , I _D = 250μA	200			V
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2		4	V
I _{GSS}	Gate Source Leakage forward	V _{GS} = 20V			100	nA
I _{GSS}	Gate Source Leakage Reverse	V _{GS} = -20V			-100	
		V _{DS} = Max rating V _{GS} =0V			250	μA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = Max rating x0.8, V _{GS} =0V T _J = +125°C			1000	
I _{D(ON)} ²	On-State Drain Current	V _{DS} > I _{D(ON)} x r _{DS(ON)} Max. V _{GS} = 10V	9			A
r _{DS(ON)} ²	Static Drain–Source On State Resistance	V _{GS} = 10V , I _{DS} = 5.0A		0.25	0.4	Ω
g _{ts} ²	Forward Transconductance	V _{DS} > 50V I _D =5.0A	3.0	4.8		S(Ω)
DYNAMIC CHARACTERISTICS						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V f = 1MHz		600		pF
C _{oss}	Output Capacitance			250		
C _{rss}	Reverse Transfer Capacitance			80		
Q _g	Total Gate Charge	V _{GS} = 10V I _D = 9A V _{DS} = 0.8 V _{Max}		19	30	nC
Q _{gs}	Gate – Source Charge			10		
Q _{gd}	Gate – Drain (“Miller”) Charge			9.0		
t _{d(ON)}	Turn–On Delay Time	V _{DD} ≈100V, I _D = 5.0A, R _G = 7.5Ω			35	ns
t _r	Rise Time				80	
t _{d(OFF)}	Turn-off Delay Time				60	
t _f	Fall Time				40	
SOURCE – DRAIN DIODE CHARACTERISTICS						
I _S	Continuous Source Current (Body Diode)	Modified MOSFET symbol showing the integral reverse P-N junc. rectifier.			9.0	A
I _{SM}	Pulsed Source Current ¹ (Body Diode)				36	
V _{SD}	Diode Forward Voltage ²	T _J = +25°C , I _S = 9A V _{GS} = 0V			2.0	V
t _{rr}	Reverse Recovery Time	T _J = +150°C , I _S = 9A V _{GS} = 0V dI _F /dt = 100A/μs		450		ns
Q _{rr}	Reverse Recovery Charge	T _J = +150°C , I _S = 9A V _{GS} = 0V dI _F /dt = 100A/μs		3.0		μC
t _{ON}	Forward Turn-on Time		NEGLECTIBLE			
PACKAGE CHARACTERISTICS						
L _D	Internal Drain Inductance			5.0		nH
L _S	Internal Source Inductance (from 6mm down source lead to source bond pad)			12.5		