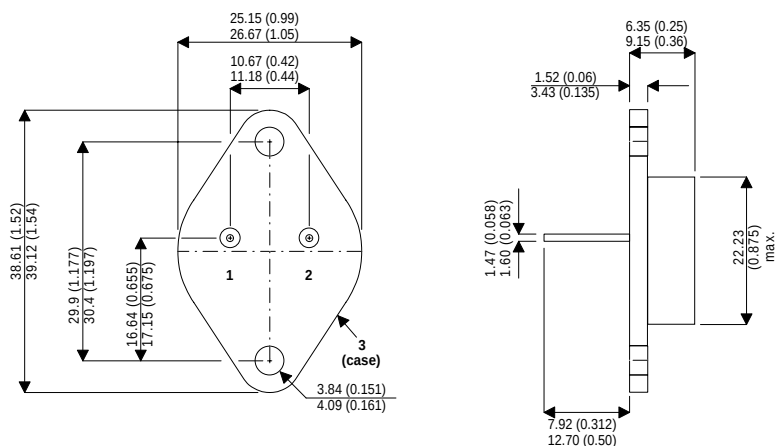


TO-3 Package Outline.

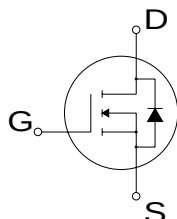
Dimensions in mm (inches)



Pin 1 – Gate

Pin 2 – Source

Case – Drain


**N-CHANNEL
ENHANCEMENT MODE
HIGH VOLTAGE
POWER MOSFETS**
 V_{DSS} **600V**
 $I_{D(cont)}$ **16A**
 $R_{DS(on)}$ **0.350Ω**

- **Faster Switching**
- **Lower Leakage**
- **TO-3 Hermetic Package**

StarMOS is a new generation of high voltage N-Channel enhancement mode power MOSFETs. This new technology minimises the JFET effect, increases packing density and reduces the on-resistance. StarMOS also achieves faster switching speeds through optimised gate layout.

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

V_{DSS}	Drain – Source Voltage	600	V
I_D	Continuous Drain Current	16	A
I_{DM}	Pulsed Drain Current ¹	64	A
V_{GS}	Gate – Source Voltage	±30	V
V_{GSM}	Gate – Source Voltage Transient	±40	
P_D	Total Power Dissipation @ $T_{case} = 25^{\circ}C$	200	W
	Derate Linearly	1.6	W/°C
T_J, T_{STG}	Operating and Storage Junction Temperature Range	–55 to 150	°C
T_L	Lead Temperature : 0.063" from Case for 10 Sec.	300	
I_{AR}	Avalanche Current ¹ (Repetitive and Non-Repetitive)	16	A
E_{AR}	Repetitive Avalanche Energy ¹	30	mJ
E_{AS}	Single Pulse Avalanche Energy ²	1210	

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Starting $T_J = 25^{\circ}C$, $L = 9.45mH$, $R_G = 25\Omega$, Peak $I_L = 16A$

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

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0\text{V}$, $I_D = 250\mu\text{A}$	600			V
I_{DSS}	Zero Gate Voltage Drain Current ($V_{GS} = 0\text{V}$)	$V_{DS} = V_{DSS}$			25	μA
		$V_{DS} = 0.8V_{DSS}$, $T_C = 125^{\circ}\text{C}$			250	
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30\text{V}$, $V_{DS} = 0\text{V}$			± 100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = 1.0\text{mA}$	2		4	V
$I_{D(ON)}$	On State Drain Current ²	$V_{DS} > I_{D(ON)} \times R_{DS(ON)}$ Max $V_{GS} = 10\text{V}$	16			A
$R_{DS(ON)}$	Drain – Source On State Resistance ²	$V_{GS} = 10\text{V}$, $I_D = 0.5 I_D [\text{Cont.}]$			0.350	Ω

DYNAMIC CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$		3450	4140	pF
C_{oss}	Output Capacitance			403	565	
C_{rss}	Reverse Transfer Capacitance			155	235	
Q_g	Total Gate Charge ³	$V_{GS} = 10\text{V}$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_D [\text{Cont.}] @ 25^{\circ}\text{C}$		140	210	nC
Q_{gs}	Gate – Source Charge			19	30	
Q_{gd}	Gate – Drain (“Miller”) Charge			68	100	
$t_{d(on)}$	Turn-on Delay Time	$V_{GS} = 15\text{V}$ $V_{DD} = 0.5 V_{DSS}$ $I_D = I_D [\text{Cont.}] @ 25^{\circ}\text{C}$ $R_G = 1.6\Omega$		12	24	ns
t_r	Rise Time			12	24	
$t_{d(off)}$	Turn-off Delay Time			40	60	
t_f	Fall Time			8	16	

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	(Body Diode)			16	A
I_{SM}	Pulsed Source Current ¹	(Body Diode)			64	
V_{SD}	Diode Forward Voltage ²	$V_{GS} = 0\text{V}$, $I_S = -I_D [\text{Cont.}]$			1.3	V
t_{rr}	Reverse Recovery Time	$I_S = -I_D [\text{Cont.}]$, $dI_S / dt = 100\text{A}/\mu\text{s}$		450		ns
Q_{rr}	Reverse Recovery Charge	$I_S = -I_D [\text{Cont.}]$, $dI_S / dt = 100\text{A}/\mu\text{s}$		8		μC

THERMAL CHARACTERISTICS

	Characteristic	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction to Case			0.62	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Junction to Ambient			30	

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width $< 380\mu\text{s}$, Duty Cycle $< 2\%$

3) See MIL–STD–750 Method 3471



CAUTION — Electrostatic Sensitive Devices. Anti-Static Procedures Must Be Followed.