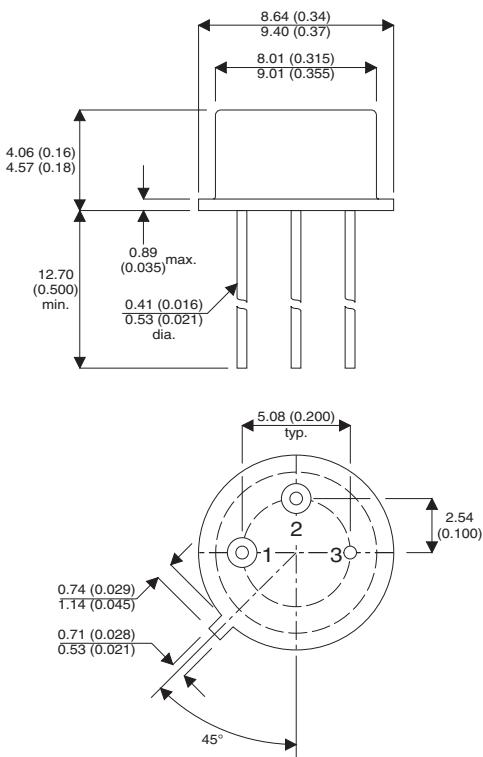


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## MECHANICAL DATA

Dimensions in mm (inches)



**TO39 Package (TO-205AF)**

Underside View

Pin 1 - Source

Pin 2 - Gate

Pin 3 - Drain and Case

## N-CHANNEL POWER MOSFET ENHANCEMENT MODE

### APPLICATIONS

- FAST SWITCHING
- MOTOR CONTROLS
- POWER SUPPLIES

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

$V_{DS}$	Drain Source Voltage	100V
$V_{DGR}$	Drain Gate Voltage ( $R_{GS} = 1\text{M}\Omega$ )	100V
$I_D$ @ $T_{case} = 25^\circ\text{C}$	Continuous Drain Current	3.5A
$I_D$ @ $T_{case} = 100^\circ\text{C}$	Continuous Drain Current	2.25A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	14A
$V_{GS}$	Gate Source Voltage	$\pm 20\text{V}$
$P_D$ @ $T_{case} = 25^\circ\text{C}$	Maximum Power Dissipation	15W
$P_D$ @ $T_{case} = 100^\circ\text{C}$	Maximum Power Dissipation	6W
Junction to Case	Linear Derating Factor	$0.12\text{W}/^\circ\text{C}$
Junction to ambient	Linear Derating Factor	$0.005\text{W}/^\circ\text{C}$
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to $+150^\circ\text{C}$
Lead Temperature	( $\frac{1}{16}$ " from case for 10 secs)	300°C

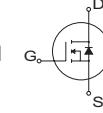
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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^\circ C$  unless otherwise stated)

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>						
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 0.25mA$	100*		V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 0.5A$	2*	4.0*	V
		$V_{DS} = 0$	$T_A = 125^\circ C$	1*	4.0*	
$I_{GSSF}$	Gate Body Leakage Forward	$V_{GS} = 20V$			100*	
		$V_{DS} = 0$	$T_A = 125^\circ C$		200*	nA
$I_{GSSR}$	Gate Body Leakage Reverse	$V_{GS} = -20V$			-100*	
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 80V$	$V_{GS} = 0$		0.25*	
		$V_{DS} = 100V$	$V_{GS} = 0$		1*	mA
			$T_C = 125^\circ C$		1	
$I_{D(on)}$	On State Drain Current1	$V_{GS} = 10V$		3.5		A
$V_{DS(on)}$	Static Drain Source On-State Voltage1	$V_{GS} = 10V$	$I_D = 3.5A$	2.1*		V
$R_{DS(on)}$	Static Drain Source On-State Resistance1	$V_{GS} = 10V$	$I_D = 2.25A$		0.6*	$\Omega$
			$T_C = 125^\circ C$		1.08*	
<b>DYNAMIC CHARACTERISTICS</b>						
$g_{fs}$	Forward Transductance 1	$V_{DS} = 5V$	$I_{DS} = 2.25A$	1.0*	3.0*	S (Ω)
$C_{iss}$	Input Capacitance	$V_{GS} = 0$	$V_{DS} = 25V$	60*	200*	
$C_{oss}$	Output Capacitance	$f = 1MHz$		40*	100*	pF
$C_{rss}$	Reverse Transfer Capacitance			10*	25*	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 34V$	$I_D = 2.25A$		15*	
$t_r$	Rise Time	$R_G = 50\Omega$	$R_L = 15\Omega$		25*	
$t_{d(off)}$	Turn-Off Delay Time	(MOSFET switching times are essentially independent of operating temperature.)			25*	
$t_f$	Fall Time				20*	
<b>BODY- DRAIN DIODE RATINGS &amp; CHARACTERISTICS</b>						
$I_S$	Continuous Source Current Body Diode	Modified MOS POWER symbol showing the integral P-N junction rectifier.			3.5*	A
$I_{SM}$	Source Current1 (Body Diode)				14	A
$V_{SD}$	Diode Forward Voltage 1	$I_S = 3.5A$	$V_{GS} = 0$		1.5*	V
		$T_J = 25^\circ C$				
$t_{rr}$	Reverse Recovery Time	$I_F = I_S$	$T_J = 25^\circ C$	200		nS
$d_i / d_t = 100A/\mu s$						
<b>THERMAL CHARACTERISTICS</b>						
$R_{\theta JC}$	Thermal Resistance Junction – Case	Free Air Operation			8.33*	
$R_{\theta JA}$	Thermal Resistance Junction – Ambient				175	$^\circ C/W$

**Notes**

1) Pulse Test: Pulse Width  $\leq 300\mu s$ ,  $\delta \leq 2\%$

\* JEDEC registered Values

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