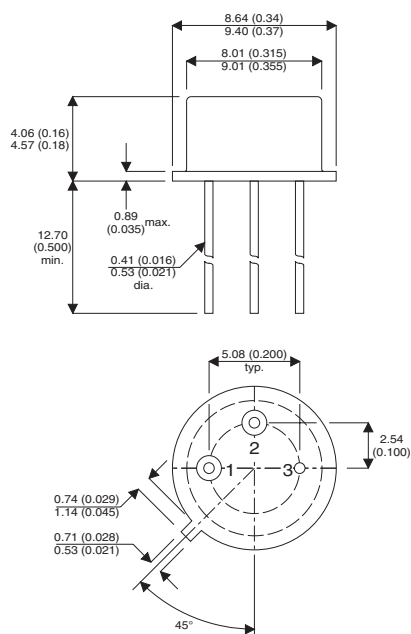


MECHANICAL DATA

Dimensions in mm (inches)



TO39 – Package (TO-205AF)

Underside View

Pin 1 – Source Pin 2 – Gate Pin 3 – Drain

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV_{DSS} 500V

$I_{D(cont)}$ 1.5

$R_{DS(on)}$ 3.0Ω

FEATURES

- AVALANCHE ENERGY RATED
- HERMETICALLY SEALED
- DYNAMIC dv/dt RATING
- SIMPLE DRIVE REQUIREMENTS

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

V_{GS}	Gate – Source Voltage	±20V
I_D	Continuous Drain Current ($V_{GS} = 10V$, $T_{case} = 25^{\circ}C$)	1.5A
I_D	Continuous Drain Current ($V_{GS} = 10V$, $T_{case} = 100^{\circ}C$)	1A
I_{DM}	Pulsed Drain Current ¹	6.5A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	20W
	Linear Derating Factor	0.16W/°C
E_{AS}	Single Pulse Avalanche Energy ²	0.11mJ
dv/dt	Peak Diode Recovery ³	3.5V/ns
T_J , T_{stg}	Operating and Storage Temperature Range	–55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	6.25°C/W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient	175°C/W

Notes

- 1) Pulse Test: Pulse Width ≤ 300μs, δ ≤ 2%
- 2) @ $V_{DD} = 50V$, $L \geq 0.100mH$, $R_G = 25\Omega$, Peak $I_L = 1.5A$, Starting $T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq 1.5A$, di/dt ≤ 50A/μs, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, SUGGESTED $R_G = 7.5\Omega$

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Issue: 1

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV _{DSS}	Drain – Source Breakdown Voltage	V _{GS} = 0	I _D = 1mA	500			V
ΔBV _{DSS}	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = 1mA			0.43		V/°C
R _{DS(on)}	Static Drain – Source On–State Resistance	V _{GS} = 10V	I _D = 1A			3	Ω
		V _{GS} = 10V	I _D = 1.5A			3.45	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS}	I _D = 250μA	2		4	V
g _{fs}	Forward Transconductance	V _{DS} =5V	I _{DS} = 1A	1		3	S(ṽ)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0	V _{DS} = 0.8BV _{DSS}			25	μA
			T _J = 125°C			250	
I _{GSS}	Forward Gate – Source Leakage	V _{GS} = 20V				100	nA
I _{GSS}	Reverse Gate – Source Leakage	V _{GS} = –20V				–100	
DYNAMIC CHARACTERISTICS							
C _{iss}	Input Capacitance	V _{GS} = 0			350		pF
C _{oss}	Output Capacitance	V _{DS} = 25V			80		
C _{rss}	Reverse Transfer Capacitance	f = 1MHz			35		
Q _g	Total Gate Charge	V _{GS} = 10V I _D = 1.5A V _{DS} = 0.5BV _{DS}		7.3		16.7	nC
Q _{gs}	Gate – Source Charge	I _D =1.5A		0.1		3	nC
Q _{gd}	Gate – Drain (“Miller”) Charge	V _{DS} = 0.5BV _{DS}		3.7		8.7	
t _{d(on)}	Turn–On Delay Time	V _{DD} = 250V				40	ns
t _r	Rise Time	I _D = 1.5A				30	
t _{d(off)}	Turn–Off Delay Time	R _G = 7.5Ω				60	
t _f	Fall Time					30	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I _S	Continuous Source Current					1.5	A
I _{SM}	Pulse Source Current ²					6.5	
V _{SD}	Diode Forward Voltage	I _S = 1.5A	T _J = 25°C			1.2	V
		V _{GS} = 0					
t _{rr}	Reverse Recovery Time	I _F = 1.5A	T _J = 25°C			900	ns
Q _{rr}	Reverse Recovery Charge	d _i / d _t ≤ 100A/μs V _{DD} ≤ 50V				5.9	μC
t _{on}	Forward Turn–On Time			Negligible			
PACKAGE CHARACTERISTICS							
L _D	Internal Drain Inductance (from centre of drain pad to die)				5.0		nH
L _S	Internal Source Inductance (from centre of source pad to end of source bond wire)				15.0		

Notes

- 1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.

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