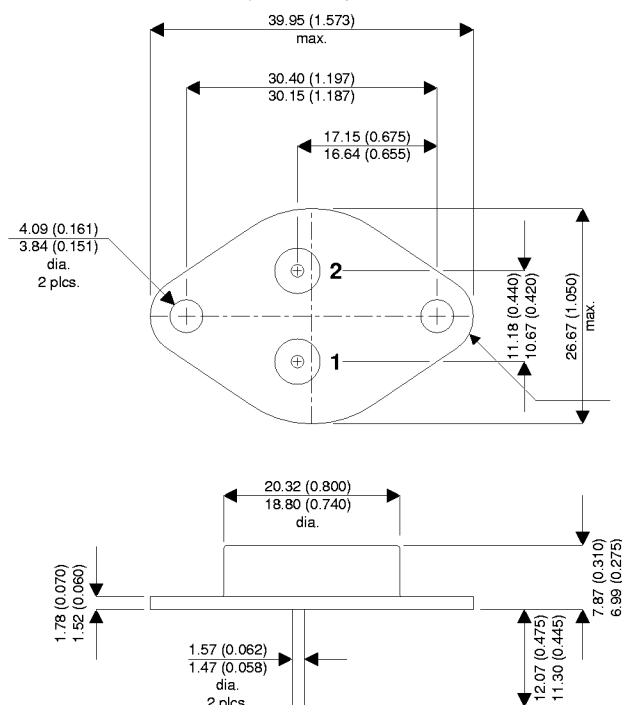


**MECHANICAL DATA**

Dimensions in mm (inches)


**TO-3 Metal Package**

Pin 1 – Gate

Pin 2 – Source

Case – Drain

**N-CHANNEL  
POWER MOSFET**
 $V_{DSS}$  100V

 $I_{D(cont)}$  38A

 $R_{DS(on)}$  0.055 $\Omega$ 
**FEATURES**

- HERMETICALLY SEALED TO-3 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- SCREENING OPTIONS AVAILABLE

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

$V_{GS}$	Gate – Source Voltage	$\pm 20V$
$I_D$	Continuous Drain Current ( $V_{GS} = 0$ , $T_{case} = 25^{\circ}C$ )	38A
$I_D$	Continuous Drain Current ( $V_{GS} = 0$ , $T_{case} = 100^{\circ}C$ )	24A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	152A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	150W
	Linear Derating Factor	1.2W/ $^{\circ}C$
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	150mJ
$I_{AR}$	Avalanche Current <sup>2</sup>	38A
$E_{AR}$	Repetitive Avalanche Energy <sup>2</sup>	15mJ
$dv/dt$	Peak Diode Recovery <sup>3</sup>	5.5V/ns
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to +150 $^{\circ}C$
$T_L$	Lead Temperature 1.6mm (0.63") from case for 10 sec.	300 $^{\circ}C$

**Notes**

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

 2) @  $V_{DD} = 50V$ ,  $L \geq 160\mu H$ ,  $R_G = 25\Omega$ , Peak  $I_L = 38A$ , Starting  $T_J = 25^{\circ}C$ 

 3) @  $I_{SD} \leq 38A$ ,  $di/dt \leq 300A/\mu s$ ,  $V_{DD} \leq BV_{DSS}$ ,  $T_J \leq 150^{\circ}C$ , Suggested  $R_G = 2.35\Omega$

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV <sub>DSS</sub>	Drain – Source Breakdown Voltage	V <sub>GS</sub> = 0	I <sub>D</sub> = 1mA	100			V
ΔBV <sub>DSS</sub> ΔT <sub>J</sub>	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I <sub>D</sub> = 1mA			0.13		V/°C
R <sub>DS(on)</sub>	Static Drain – Source On–State Resistance <sup>1</sup>	V <sub>GS</sub> = 10V	I <sub>D</sub> = 24A			0.055	Ω
		V <sub>GS</sub> = 10V	I <sub>D</sub> = 38A			0.065	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub>	I <sub>D</sub> = 250mA	2		4	V
g <sub>fs</sub>	Forward Transconductance <sup>1</sup>	V <sub>DS</sub> ≥ 15V	I <sub>DS</sub> = 24A	9			S (Ω)
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>GS</sub> = 0	V <sub>DS</sub> = 0.8BV <sub>DSS</sub>			25	μA
			T <sub>J</sub> = 125°C			250	
I <sub>GSS</sub>	Forward Gate – Source Leakage	V <sub>GS</sub> = 20V				100	nA
I <sub>GSS</sub>	Reverse Gate – Source Leakage	V <sub>GS</sub> = –20V				–100	
DYNAMIC CHARACTERISTICS							
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0			3700		pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 25V			1100		
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1MHz			200		
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 10V		50		125	nC
Q <sub>gs</sub>	Gate – Source Charge	I <sub>D</sub> = 38A		8		22	
Q <sub>gd</sub>	Gate – Drain (“Miller”) Charge	V <sub>DS</sub> = 0.5BV <sub>DSS</sub>		25		65	
t <sub>d(on)</sub>	Turn–On Delay Time	V <sub>DD</sub> = 50V I <sub>D</sub> = 38A R <sub>G</sub> = 2.35Ω				35	ns
t <sub>r</sub>	Rise Time					190	
t <sub>d(off)</sub>	Turn–Off Delay Time					170	
t <sub>f</sub>	Fall Time					130	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I <sub>S</sub>	Continuous Source Current					38	A
I <sub>SM</sub>	Pulse Source Current <sup>2</sup>					152	
V <sub>SD</sub>	Diode Forward Voltage <sup>1</sup>	I <sub>S</sub> = 38A	T <sub>J</sub> = 25°C			1.8	V
		V <sub>GS</sub> = 0					
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> = 38A	T <sub>J</sub> = 25°C			500	ns
Q <sub>rr</sub>	Reverse Recovery Charge <sup>1</sup>	d <sub>i</sub> / d <sub>t</sub> ≤ 100A/μs V <sub>DD</sub> ≤ 50V				2.9	μC
t <sub>on</sub>	Forward Turn–On Time			Negligible			
PACKAGE CHARACTERISTICS							
L <sub>D</sub>	Internal Drain Inductance (measured from 6mm down drain lead to centre of die)				5.0		nH
L <sub>S</sub>	Internal Source Inductance (from 6mm down source lead to source bond pad)				13		
THERMAL CHARACTERISTICS							
R <sub>θJC</sub>	Thermal Resistance Junction – Case					0.83	°C/W
R <sub>θCS</sub>	Thermal Resistance Case – Sink				0.12		
R <sub>θJA</sub>	Thermal Resistance Junction – Ambient					30	

**Notes**

1) Pulse Test: Pulse Width  $\leq 300\text{ms}$ ,  $\delta \leq 2\%$ 

2) Repetitive Rating – Pulse width limited by maximum junction temperature.

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