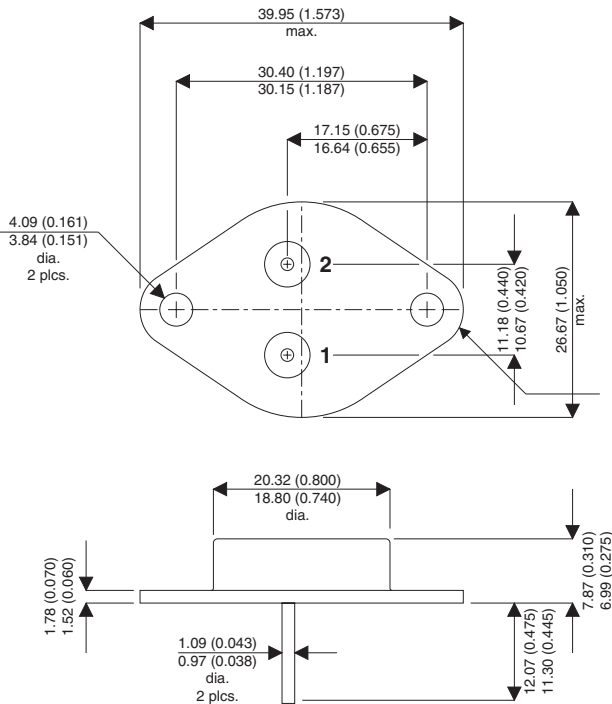


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO-3 (TO-204AA) Metal Package**

Pin 1 – Source      Pin 2 – Gate      Case – Drain

**N-CHANNEL  
POWER MOSFET**

$V_{DSS}$                     **400V**  
 $I_{D(cont)}$                 **14A**  
 $R_{DS(on)}$                 **0.300Ω**

**FEATURES**

- REPETITIVE AVALANCHE RATINGS
- DYNAMIC DV/DT RATING
- HERMETICALLY SEALED
- SIMPLE DRIVE REQUIREMENTS
- EASE OF PARALLELING

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

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 25^{\circ}C$ )	14A
	( $V_{GS} = 0, T_{case} = 100^{\circ}C$ )	9.0A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	56A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	150W
	Linear Derating Factor	1.2W/°C
$E_{AS}$	Single Pulse Avalanche Energy <sup>3</sup>	11.3mJ
$I_{AR}$	Avalanche Current <sup>1</sup>	14A
$E_{AR}$	Repetitive Avalanche Energy <sup>1</sup>	15mJ
dv/dt	Peak Diode Recovery <sup>4</sup>	4.0V/ns
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to +150°C

**Notes**

- 1) Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.
- 3)  $V_{DD} = 50V$ , Peak  $I_L = 14A$ , Starting  $T_J = 25^{\circ}C$
- 4)  $I_{SD} \leq 14A$ ,  $di/dt \leq 145A/\mu s$ ,  $V_{DD} \leq 400V$ ,  $T_J \leq 150^{\circ}C$ , Suggested  $R_G = 2.35\Omega$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

**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	$V_{GS} = 0V$	$I_D = 1mA$	400	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}C$ $I_D = 1mA$		0.46	$V/^{\circ}C$
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10V$	$I_D = 9.0A$		0.300
		$V_{GS} = 10V$	$I_D = 14A$		0.400
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu A$	2.0	4.0
$g_{fs}$	Forward Transconductance	$V_{DS} \geq 15V$	$I_{DS} = 9.0A$	6.0	S ( $\bar{\omega}$ )
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0V$	$V_{DS} = 320V$		25
			$T_J = 125^{\circ}C$		250
$I_{GSS}$	Gate – Source Leakage Forward	$V_{GS} = +20V$			+100
$I_{GSS}$	Gate – Source Leakage Reverse	$V_{GS} = -20V$			-100
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	Input Capacitance	$V_{GS} = 0V$		2660	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25V$		680	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1MHz$		250	
$Q_g$	Total Gate Charge	$V_{GS} = 10V$		52	110
$Q_{gs}$	Gate – Source Charge	$I_D = 14A$		5.0	18
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 200V$		25	65
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 200V$			35
$t_r$	Rise Time	$I_D = 14A$			190
$t_{d(off)}$	Turn–Off Delay Time	$R_G = 2.35\Omega$			170
$t_f$	Fall Time				130
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current				14
$I_{SM}$	Pulse Source Current <sup>2</sup>				56
$V_{SD}$	Diode Forward Voltage <sup>1</sup>	$I_S = 28A$	$T_J = 25^{\circ}C$		1.7
		$V_{GS} = 0$			
$t_{rr}$	Reverse Recovery Time	$I_F = 28A$	$T_J = 25^{\circ}C$		1200
$Q_{rr}$	Reverse Recovery Charge <sup>1</sup>	$d_i / d_t \leq 100A/\mu s$	$V_{DD} \leq 50V$		250
$t_{on}$	Forward Turn–On Time			Negligible	
<b>PACKAGE CHARACTERISTICS</b>					
$L_D + L_S$	Total Inductance (measured from the centre of drain pad to center of source pad)			6.1	nH
<b>THERMAL CHARACTERISTICS</b>					
$R_{thJC}$	Thermal Resistance Junction – Case			0.83	$^{\circ}C/W$
$R_{thJA}$	Thermal Resistance Junction – Ambient (Typical socket mount)			30	

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