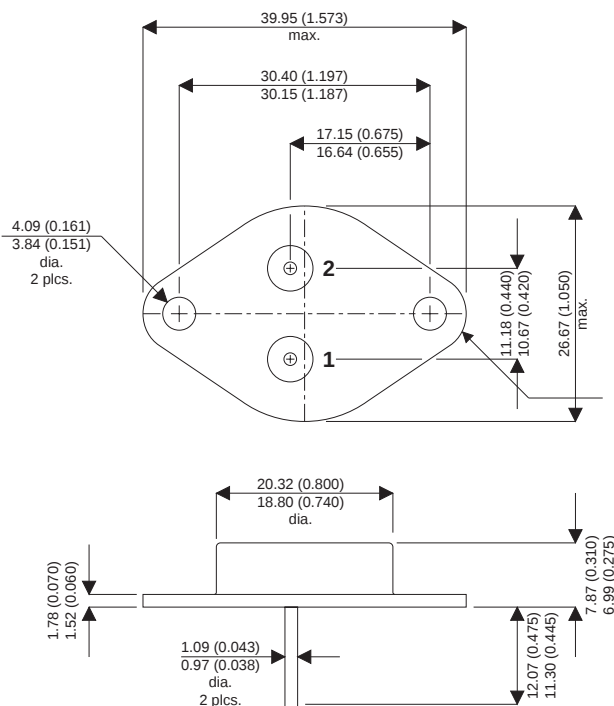


MECHANICAL DATA

Dimensions in mm (inches)


TO-3 Metal Package

Pin 1 – Gate Pin 2 – Source Case – Drain

**N-CHANNEL
POWER MOSFET**

V_{DS} **100V**
 $I_{D(cont)}$ **28A**
 $R_{DS(on)}$ **0.077Ω**

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 ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	28A
	($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	20A
I_{DM}	Pulsed Drain Current ¹	112A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	125W
	Linear Derating Factor	1.0W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	250mJ
I_{AR}	Avalanche Current ²	28A
E_{AR}	Repetitive Avalanche Energy ²	12.5mJ
dv/dt	Peak Diode Recovery ³	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) @ $V_{DD} = 25V$, $L \geq 480\mu H$, $R_G = 25\Omega$, Peak $I_L = 28A$, Starting $T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq 28A$, $di/dt \leq 170A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, Suggested $R_G = 9.1\Omega$

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 ($T_{\text{case}} = 25^{\circ}\text{C}$ 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	100			V
ΔBV _{DSS} ΔT _J	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = 1mA			0.13		V/°C
R _{DS(on)}	Static Drain – Source On–State Resistance ¹	V _{GS} = 10V	I _D = 20A			0.077	Ω
		V _{GS} = 10V	I _D = 28A			0.089	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS}	I _D = 250μA	2		4	V
g _{fs}	Forward Transconductance ¹	V _{DS} ≥ 15V	I _{DS} = 20A	9.1			S (Ω)
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			1660		pF
C _{oss}	Output Capacitance	V _{DS} = 25V			550		
C _{rss}	Reverse Transfer Capacitance	f = 1MHz			120		
Q _g	Total Gate Charge	V _{GS} = 10V		30		59	nC
Q _{gs}	Gate – Source Charge	I _D = 28A		2.4		12	
Q _{gd}	Gate – Drain (“Miller”) Charge	V _{DS} = 0.5BV _{DSS}		12		30.7	
t _{d(on)}	Turn–On Delay Time	V _{DD} = 50V I _D = 28A R _G = 9.1Ω				21	ns
t _r	Rise Time					145	
t _{d(off)}	Turn–Off Delay Time					21	
t _f	Fall Time					105	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I _S	Continuous Source Current					28	A
I _{SM}	Pulse Source Current ²					112	
V _{SD}	Diode Forward Voltage ¹	I _S = 28A	T _J = 25°C			1.5	V
		V _{GS} = 0					
t _{rr}	Reverse Recovery Time	I _F = 28A	T _J = 25°C			400	ns
Q _{rr}	Reverse Recovery Charge ¹	d _i / d _t ≤ 100A/μs V _{DD} ≤ 50V				2.9	μC
t _{on}	Forward Turn–On Time			Negligible			
PACKAGE CHARACTERISTICS							
L _D	Internal Drain Inductance (measured from 6mm down drain lead to centre of die)				5.0		nH
L _S	Internal Source Inductance (from 6mm down source lead to source bond pad)				13		
THERMAL CHARACTERISTICS							
R _{θJC}	Thermal Resistance Junction – Case					1.67	°C/W
R _{θCS}	Thermal Resistance Case – Sink				0.12		
R _{θJA}	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.