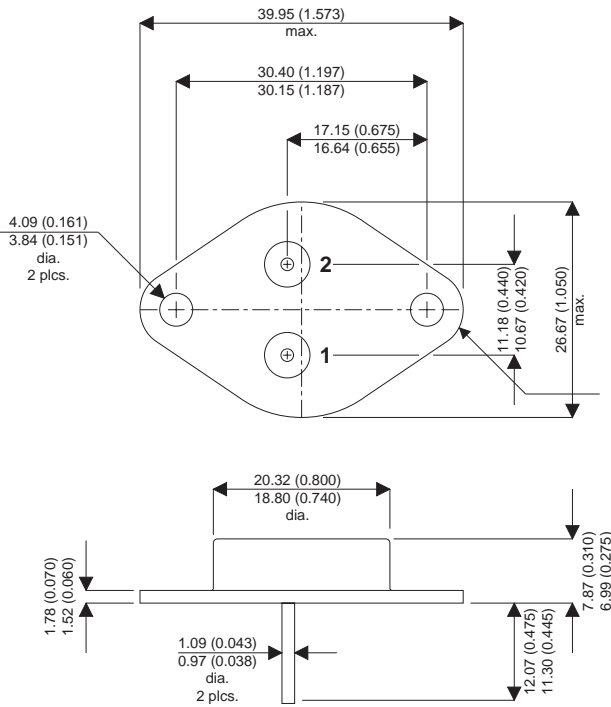


MECHANICAL DATA

Dimensions in mm (inches)



TO-3 Metal Package

Pin 1 – Gate Pin 2 – Source Case – Drain

**N-CHANNEL
POWER MOSFET**

V_{DSS} **100V**
 $I_{D(cont)}$ **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 ($T_{case} = 25^{\circ}C$ 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
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}C$ $I_D = 1mA$		0.13	$V/^{\circ}C$
$R_{DS(on)}$	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	$V_{DS} = V_{GS}$ $I_D = 250\mu A$	2	4	V
g_{fs}	Forward Transconductance ¹	$V_{DS} \geq 15V$ $I_{DS} = 20A$	9.1		S (τ)
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}C$		25	μA
				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_{riss}	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	$V_{DD} = 50V$ $I_D = 28A$ $R_G = 9.1\Omega$		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	$I_S = 28A$ $T_J = 25^{\circ}C$ $V_{GS} = 0$		1.5	V
t_{rr}	Reverse Recovery Time	$I_F = 28A$ $T_J = 25^{\circ}C$		400	ns
Q_{rr}	Reverse Recovery Charge ¹	$d_i / d_t \leq 100A/\mu s$ $V_{DD} \leq 50V$		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					
$R_{\theta JC}$	Thermal Resistance Junction – Case			1.67	$^{\circ}C/W$
$R_{\theta CS}$	Thermal Resistance Case – Sink		0.12		
$R_{\theta JA}$	Thermal Resistance Junction – Ambient			30	

Notes

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

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