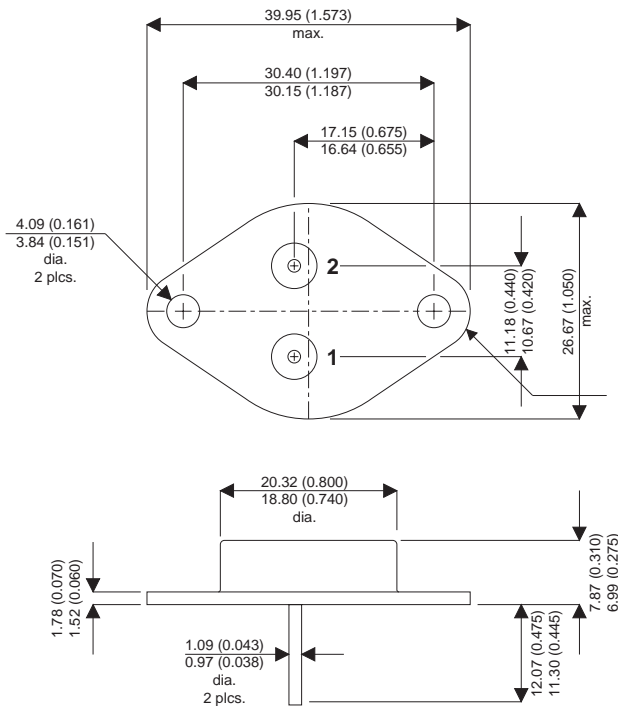


MECHANICAL DATA

Dimensions in mm (inches)


TO-3 Metal Package

Pin 1 – Gate Pin 2 – Source Case – Drain

**P-CHANNEL
POWER MOSFET**
 V_{DSS} **-100V**
 $I_{D(cont)}$ **-18A**
 $R_{DS(on)}$ **0.2Ω**
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 ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	-18A
	($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	-11A
I_{DM}	Pulsed Drain Current ¹	-72A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	125W
	Linear Derating Factor	1.0W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	500mJ
I_{AR}	Avalanche Current ²	-18A
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) @ $V_{DD} = -25V$, $L \geq 2.3mH$, $R_G = 25\Omega$, Peak $I_L = -18A$, Starting $T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq -18A$, $di/dt \leq -100A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, 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	$V_{\text{GS}} = 0$ $I_{\text{D}} = -1\text{mA}$	-100			V
$\frac{\Delta BV_{\text{DSS}}}{\Delta T_{\text{J}}}$ Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_{\text{D}} = -1\text{mA}$		-0.087		V/ $^{\circ}\text{C}$
$R_{\text{DS(on)}}$ Static Drain – Source On–State Resistance ¹	$V_{\text{GS}} = 10\text{V}$ $I_{\text{D}} = -11\text{A}$			0.2	Ω
	$V_{\text{GS}} = 10\text{V}$ $I_{\text{D}} = -18\text{A}$			0.23	
$V_{\text{GS(th)}}$ Gate Threshold Voltage	$V_{\text{DS}} = V_{\text{GS}}$ $I_{\text{D}} = -250\mu\text{A}$	-2		-4	V
g_{fs} Forward Transconductance ¹	$V_{\text{DS}} \geq -15\text{V}$ $I_{\text{DS}} = -11\text{A}$	6.2			S $\bar{\nu}$
I_{DSS} Zero Gate Voltage Drain Current	$V_{\text{GS}} = 0$ $V_{\text{DS}} = 0.8BV_{\text{DSS}}$ $T_{\text{J}} = 125^{\circ}\text{C}$			-25	μA
				-250	
I_{GSS} Forward Gate – Source Leakage	$V_{\text{GS}} = -20\text{V}$			-100	nA
I_{GSS} Reverse Gate – Source Leakage	$V_{\text{GS}} = 20\text{V}$			100	
DYNAMIC CHARACTERISTICS					
C_{iss} Input Capacitance	$V_{\text{GS}} = 0$		1400		pF
C_{oss} Output Capacitance	$V_{\text{DS}} = -25\text{V}$		600		
C_{riss} Reverse Transfer Capacitance	$f = 1\text{MHz}$		200		
Q_{g} Total Gate Charge	$V_{\text{GS}} = -10\text{V}$	31		60	nC
Q_{gs} Gate – Source Charge	$I_{\text{D}} = -18\text{A}$	3.7		13	
Q_{gd} Gate – Drain (“Miller”) Charge	$V_{\text{DS}} = 0.5BV_{\text{DSS}}$	7.0		35.2	
$t_{\text{d(on)}}$ Turn–On Delay Time	$V_{\text{DD}} = -50\text{V}$ $I_{\text{D}} = -18\text{A}$ $R_{\text{G}} = 9.1\Omega$			35	ns
t_{r} Rise Time				85	
$t_{\text{d(off)}}$ Turn–Off Delay Time				85	
t_{f} Fall Time				65	
SOURCE – DRAIN DIODE CHARACTERISTICS					
I_{S} Continuous Source Current				-18	A
I_{SM} Pulse Source Current ²				-72	
V_{SD} Diode Forward Voltage ¹	$I_{\text{S}} = -18\text{A}$ $T_{\text{J}} = 25^{\circ}\text{C}$ $V_{\text{GS}} = 0$			-4.2	V
t_{rr} Reverse Recovery Time ¹	$I_{\text{F}} = -18\text{A}$ $T_{\text{J}} = 25^{\circ}\text{C}$		170	280	ns
Q_{rr} Reverse Recovery Charge	$d_i / d_t \leq -100\text{A}/\mu\text{s}$ $V_{\text{DD}} \leq -50\text{V}$			3.6	
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					
$R_{\theta\text{JC}}$ Thermal Resistance Junction – Case				1.0	$^{\circ}\text{C}/\text{W}$
$R_{\theta\text{CS}}$ Thermal Resistance Case – Sink			0.12		
$R_{\theta\text{JA}}$ 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.