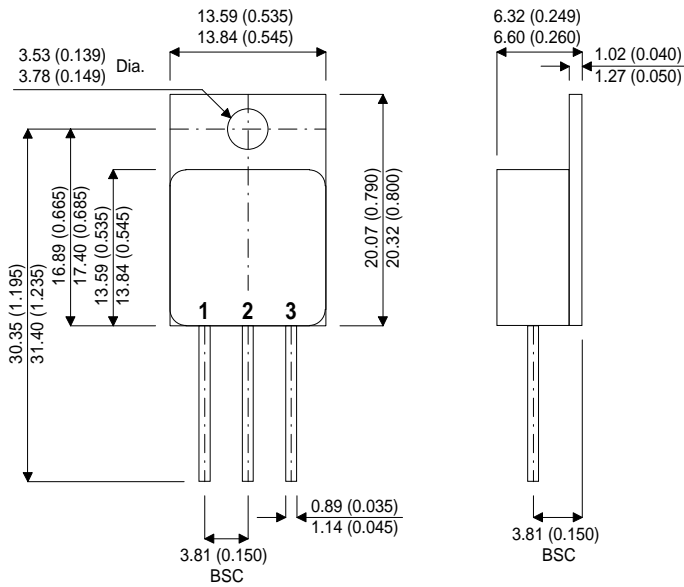


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO-254 – Metal Package**

Pin 1 – Drain      Pin 2 – Source      Pin 3 – Gate

**P-CHANNEL  
MOS  
TRANSISTOR**

$V_{DSS}$       **-50V**  
 $I_{D(cont)}$       **-18A**  
 $R_{DS(on)}$       **0.14Ω**

**FEATURES**

- P CHANNEL
- REPETITIVE AVALANCHE RATED
- DYNAMIC dv/dt RATING
- FAST SWITCHING
- EASE OF PARALLELING
- SIMPLE DRIVE REQUIREMENTS

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

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current ( $V_{GS} = -10V$ , $T_{case} = 25^{\circ}C$ )	-18A
$I_D$	Continuous Drain Current ( $V_{GS} = -10V$ , $T_{case} = 100^{\circ}C$ )	-13A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-72A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	88W
	Linear Derating Factor	0.59W/°C
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	370mJ
$I_{AR}$	Avalanche Current <sup>1</sup>	-18A
$E_{AR}$	Repetitive Avalanche Energy <sup>1</sup>	8.8mJ
dv/dt	Peak Diode Recovery <sup>3</sup>	-4.5V/ns
$T_J$	Operating Junction Temperature	-55 to +175°C
$T_{STG}$	Storage Temperature Range	-55 to +200°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	0.6°C/W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	48°C/W

**Notes**

- 1) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2) @  $V_{DD} = -25V$ ,  $L = 1.3mH$ ,  $R_G = 25\Omega$ ,  $I_{AS} = -18A$ , Starting  $T_J = 25^{\circ}C$ .
- 3) @  $I_{SD} \leq -18A$ ,  $di/dt \leq 170A/\mu s$ ,  $V_{DD} \leq BV_{DSS}$ ,  $T_J \leq 175^{\circ}C$ .

**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

E-mail: [sales@semelab.co.uk](mailto:sales@semelab.co.uk) Website: <http://www.semelab.co.uk>

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$ Drain – Source Breakdown Voltage	$V_{GS} = 0$ $I_D = -250\mu\text{A}$	-50			V
$\Delta BV_{DSS} / \Delta T_J$ Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}\text{C}$ $I_D = -1\text{mA}$		-0.060		V/ $^{\circ}\text{C}$
$R_{DS(on)}$ Static Drain – Source On Resistance <sup>1</sup>	$V_{GS} = -10\text{V}$ $I_D = -11\text{A}$			0.14	$\Omega$
$V_{GS(th)}$ Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = -250\mu\text{A}$	-2		-4	V
$g_{fs}$ Forward Transconductance <sup>1</sup>	$V_{DS} = -25\text{V}$ $I_D = -11\text{A}$	5.9			S
$I_{DSS}$ Zero Gate Voltage Drain Current	$V_{DS} = -60\text{V}$ $V_{GS} = 0$			-100	$\mu\text{A}$
	$V_{DS} = -48\text{V}$ $V_{GS} = 0$ $T_J = 125^{\circ}\text{C}$			-500	
$I_{GSS}$ Forward Gate – Source Leakage	$V_{GS} = -20\text{V}$			-100	nA
$I_{GSS}$ Reverse Gate – Source Leakage	$V_{GS} = 20\text{V}$			100	
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$ Input Capacitance	$V_{GS} = 0$		1100		pF
$C_{oss}$ Output Capacitance	$V_{DS} = -25\text{V}$		620		
$C_{rss}$ Reverse Transfer Capacitance	$f = 1\text{MHz}$		100		
$Q_g$ Total Gate Charge <sup>1</sup>	$I_D = -18\text{A}$			34	nC
$Q_{gs}$ Gate – Source Charge <sup>1</sup>	$V_{DS} = -48\text{V}$			9.9	
$Q_{gd}$ Gate – Drain (“Miller”) Charge <sup>1</sup>	$V_{GS} = -10\text{V}$			16	
$t_{d(on)}$ Turn-On Delay Time <sup>1</sup>	$V_{DD} = -30\text{V}$		18		nC
$t_r$ Rise Time <sup>1</sup>	$I_D = -18\text{A}$		120		
$t_{d(off)}$ Turn-Off Delay Time <sup>1</sup>	$R_G = 12\Omega$		20		
$t_f$ Fall Time <sup>1</sup>	$R_D = 1.5\Omega$		58		
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$ Continuous Source Current (Body Diode)				-18	A
$I_{SM}$ Pulse Source Current <sup>2</sup> (Body Diode)				-72	
$V_{SD}$ Diode Forward Voltage <sup>1</sup>	$I_S = -18\text{A}$ $T_J = 25^{\circ}\text{C}$ $V_{GS} = 0$			-6.3	V
$t_{rr}$ Reverse Recovery Time <sup>1</sup>	$I_F = -18\text{A}$ $T_J = 25^{\circ}\text{C}$		100	200	ns
$Q_{rr}$ Reverse Recovery Charge <sup>1</sup>	$d_i / d_t = 100\text{A}/\mu\text{s}$		0.28	0.52	$\mu\text{C}$
<b>PACKAGE CHARACTERISTICS</b>					
$L_D$ Internal Drain Inductance (from 6mm down lead to centre of drain bond pad)			4.5		nH
$L_S$ Internal Source Inductance (from 6mm down lead to centre of source bond pad)			7.5		

**Notes**

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