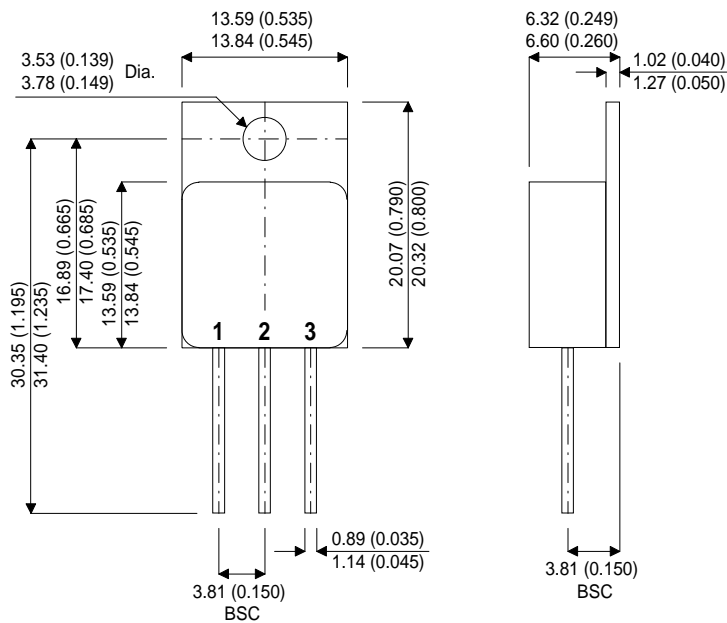


MECHANICAL DATA

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	$\pm 20V$
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 ¹	-72A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	88W
	Linear Derating Factor	0.59W/°C
E_{AS}	Single Pulse Avalanche Energy ²	370mJ
I_{AR}	Avalanche Current ¹	-18A
E_{AR}	Repetitive Avalanche Energy ¹	8.8mJ
dv/dt	Peak Diode Recovery ³	-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) @ $I_{SD} \leq -18A, di/dt \leq 170A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 175^{\circ}C$.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS					
BV_{DSS} Drain – Source Breakdown Voltage	$V_{GS} = 0$ $I_D = -250\mu\text{A}$	-50			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$ Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = -1\text{mA}$		-0.060		V/ $^{\circ}\text{C}$
$R_{DS(on)}$ Static Drain – Source On Resistance ¹	$V_{GS} = -10\text{V}$ $I_D = -11\text{A}$			0.14	Ω
$V_{GS(th)}$ Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = -250\mu\text{A}$	-2		-4	V
g_{fs} Forward Transconductance ¹	$V_{DS} = -25\text{V}$ $I_D = -11\text{A}$	5.9			S
I_{DSS} Zero Gate Voltage Drain Current	$V_{DS} = -60\text{V}$ $V_{GS} = 0$			-100	μA
	$V_{DS} = -48\text{V}$ $V_{GS} = 0$ $T_J = 125^{\circ}\text{C}$			-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	
DYNAMIC CHARACTERISTICS					
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 ¹	$I_D = -18\text{A}$			34	nC
Q_{gs} Gate – Source Charge ¹	$V_{DS} = -48\text{V}$			9.9	
Q_{gd} Gate – Drain (“Miller”) Charge ¹	$V_{GS} = -10\text{V}$			16	
$t_{d(on)}$ Turn–On Delay Time ¹	$V_{DD} = -30\text{V}$		18		nC
t_r Rise Time ¹	$I_D = -18\text{A}$		120		
$t_{d(off)}$ Turn–Off Delay Time ¹	$R_G = 12\Omega$		20		
t_f Fall Time ¹	$R_D = 1.5\Omega$		58		
SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S Continuous Source Current (Body Diode)				-18	A
I_{SM} Pulse Source Current ² (Body Diode)				-72	
V_{SD} Diode Forward Voltage ¹	$I_S = -18\text{A}$ $T_J = 25^{\circ}\text{C}$ $V_{GS} = 0$			-6.3	V
t_{rr} Reverse Recovery Time ¹	$I_F = -18\text{A}$ $T_J = 25^{\circ}\text{C}$		100	200	ns
Q_{rr} Reverse Recovery Charge ¹	$d_i / d_t = 100\text{A}/\mu\text{s}$		0.28	0.52	μC
PACKAGE CHARACTERISTICS					
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.