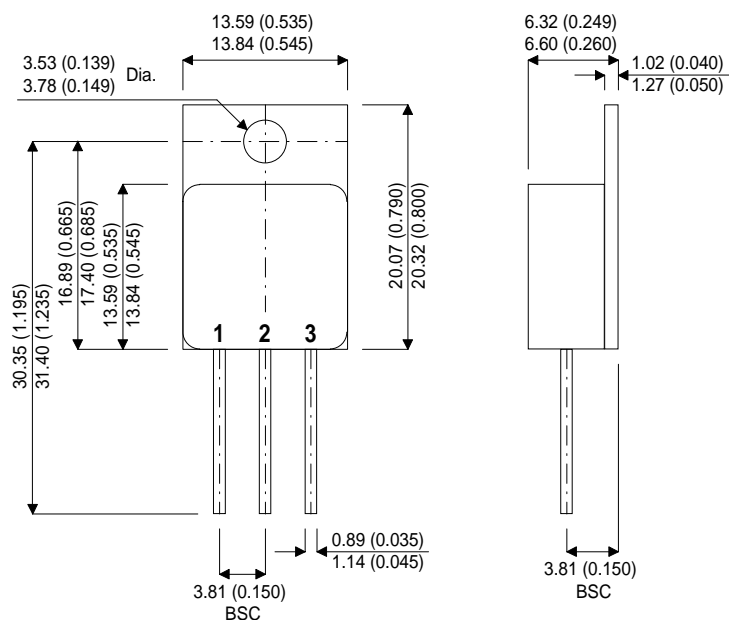


**MECHANICAL DATA**

Dimensions in mm (inches)


**N-CHANNEL  
POWER MOSFET**

$V_{DSS}$	<b>400V</b>
$I_{D(cont)}$	<b>14A</b>
$R_{DS(on)}$	<b>0.315<math>\Omega</math></b>

**FEATURES**

- N-CHANNEL MOSFET
- HIGH VOLTAGE
- INTEGRAL PROTECTION DIODE
- HERMETIC ISOLATED TO-254 PACKAGE
- CERAMIC SURFACE MOUNT PACKAGE OPTION

**TO-254AA – Isolated Metal Package**

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

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

$V_{GS}$	Gate – Source Voltage		$\pm 20\text{V}$
$I_D$	Continuous Drain Current	@ $V_{GS} = 10\text{V}$ , $T_C = 25^\circ\text{C}$	14A
		@ $V_{GS} = 10\text{V}$ , $T_C = 100^\circ\text{C}$	9.0A
$I_{DM}$	Pulsed Drain Current		56A
$P_D$	Max. Power Dissipation	@ $T_C = 25^\circ\text{C}$	150W
	Linear Derating Factor		1.2W / $^\circ\text{C}$
$I_L$	Avalanche Current, Clamped <sup>1</sup>		14A
dv / dt	Peak Diode Recovery <sup>2</sup>		4V / ns
$R_{\theta JC}$	Thermal Resistance Junction – Case		0.83 $^\circ\text{C} / \text{W}$
$R_{\theta JA}$	Thermal Resistance Junction – Ambient		48 $^\circ\text{C} / \text{W}$
$R_{\theta CS}$	Thermal Resistance Case – Sink		0.21 $^\circ\text{C} / \text{W}$ typ.
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range		-55 to 150 $^\circ\text{C}$
$T_L$	Lead Temperature (1.6mm from case for 10s)		300 $^\circ\text{C}$

 1)  $V_{DD} = 50\text{V}$ , Starting  $T_J = 25^\circ\text{C}$ ,  $L \geq 1\text{mH}$ ,  $R_G = 25\Omega$ , Peak  $I_L = 27.4\text{A}$ 

 2)  $I_{SD} \leq 27.4\text{A}$ ,  $di/dt \leq 190\text{A} / \mu\text{S}$ ,  $V_{DD} \leq BV_{DSS}$ ,  $T_J \leq 150^\circ\text{C}$ , Suggested  $R_G = 2.35\Omega$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1\text{mA}$	400	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^\circ\text{C}$ $I_D = 1\text{mA}$		0.46	$\text{V}/^\circ\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance <sup>2</sup>	$V_{GS} = 10\text{V}$	$I_D = 9\text{A}$		0.315
		$V_{GS} = 10\text{V}$	$I_D = 14\text{A}$		0.415
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4
$g_{fs}$	Forward Transconductance <sup>2</sup>	$V_{DS} \geq 15\text{V}$	$I_{DS} = 9\text{A}$	6	$\text{S}(\bar{\nu})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$ $T_J = 125^\circ\text{C}$		25
					250
$I_{GSS}$	Forward Gate – Source Leakage	$V_{GS} = 20\text{V}$			100
$I_{GSS}$	Reverse Gate – Source Leakage	$V_{GS} = -20\text{V}$			-100
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	Input Capacitance	$V_{GS} = 0$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$		2600	pF
$C_{oss}$	Output Capacitance			660	
$C_{rss}$	Reverse Transfer Capacitance			250	
$C_{DC}$	Drain – Case Capacitance			12	
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{V}$		52	110
$Q_{gs}$	Gate – Source Charge	$I_D = 14\text{A}$		5	18
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$		25	65
$t_{d(on)}$	Turn– On Delay Time	$V_{DD} = 200\text{V}$ $I_D = 14\text{A}$ $R_G = 2.35\Omega$			35
$t_r$	Rise Time				190
$t_{d(off)}$	Turn–Off Delay Time				170
$t_f$	Fall Time				130
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current				14
$I_{SM}$	Pulse Source Current <sup>1</sup>				56
$V_{SD}$	Diode Forward Voltage <sup>2</sup>	$I_S = 14\text{A}$	$T_J = 25^\circ\text{C}$		1.7
$t_{rr}$	Reverse Recovery Time <sup>2</sup>	$I_F = 14\text{A}$	$T_J = 25^\circ\text{C}$		1200
$Q_{rr}$	Reverse Recovery Charge <sup>2</sup>	$d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$			11
$t_{on}$	Forward Turn–On Time	Negligible			
<b>PACKAGE CHARACTERISTICS</b>					
$L_D$	Internal Drain Inductance Measured from 6mm down drain lead to centre of die			8.7	nH
$L_S$	Internal Source Inductance Measured from 6mm down source lead to source bond pad			8.7	

**Notes**

- 1) Repetitive Rating – Pulse width limited by Maximum Junction Temperature
- 2) Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ ,  $\delta \leq 2\%$ .



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