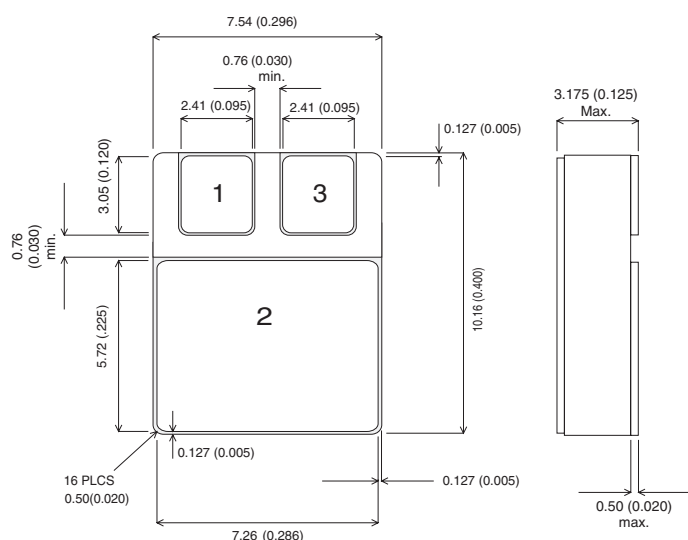


**MECHANICAL DATA**

Dimensions in mm (inches)



**SMD05 (TO-276AA)**

**N-CHANNEL  
POWER MOSFET  
FOR HI-REL  
APPLICATIONS**

$V_{DSS}$             **100V**  
 $I_{D(cont)}$         **11A**  
 $R_{DS(on)}$         **0.19Ω**

**FEATURES**

- HERMETICALLY SEALED
- SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- SCREENING OPTIONS AVAILABLE
- ALL LEADS ISOLATED FROM CASE

**IRFNJ130**

PAD1 = GATE    PAD 2 DRAIN    PAD3 = SOURCE

**IRFN130SMD05**

PAD1 = SOURCE    PAD 2 = DRAIN    PAD3 = GATE

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

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current @ $T_{case} = 25^{\circ}C$	11A
$I_D$	Continuous Drain Current @ $T_{case} = 100^{\circ}C$	7A
$I_{DM}$	Pulsed Drain Current	44A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	45W
	Linear Derating Factor	0.36W/°C
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.8°C/W max.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1\text{mA}$	100	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^\circ\text{C}$ $I_D = 1\text{mA}$		0.1	$\text{V}/^\circ\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10\text{V}$	$I_D = 7\text{A}$		0.19
		$V_{GS} = 10\text{V}$	$I_D = 11\text{A}$		0.22
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4
$g_{fs}$	Forward Transconductance	$V_{DS} \geq 15\text{V}$	$I_{DS} = 7\text{A}$	3	$\text{S}(\overline{75})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$		25
			$T_J = 125^\circ\text{C}$		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	$V_{GS} = 0$		650	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25\text{V}$		240	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1\text{MHz}$		44	
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{V}$	$I_D = 11\text{A}$	12.8	28.5
$Q_{gs}$	Gate – Source Charge	$V_{DS} = 0.5BV_{DSS}$			nC
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$I_D = 11\text{A}$		1.0	6.3
$t_{d(on)}$	Turn–On Delay Time	$V_{DS} = 0.5BV_{DSS}$		3.8	16.6
$t_r$	Rise Time	$V_{DD} = 50\text{V}$			30
$t_{d(off)}$	Turn–Off Delay Time	$I_D = 11\text{A}$			75
$t_f$	Fall Time	$R_G = 7.5\Omega$			40
					45
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current				11
$I_{SM}$	Pulse Source Current				43
$V_{SD}$	Diode Forward Voltage	$I_S = 11\text{A}$	$T_J = 25^\circ\text{C}$		1.5
$t_{rr}$	Reverse Recovery Time	$V_{GS} = 0$			300
$Q_{rr}$	Reverse Recovery Charge	$I_S = 11\text{A}$	$T_J = 25^\circ\text{C}$		3
		$d_i / d_t \leq 100\text{A}/\mu\text{s}$		$V_{DD} \leq 50\text{V}$	$\mu\text{C}$
<b>PACKAGE CHARACTERISTICS</b>					
$L_D$	Internal Drain Inductance	(from 6mm down drain lead pad to centre of die)		8.7	nH
$L_S$	Internal Source Inductance	(from 6mm down source lead to centre of source bond pad)		8.7	

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