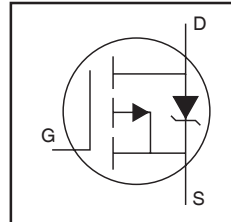


**IRF4905SPbF**  
**IRF4905LPbF**

**Features**

- Advanced Process Technology
- Ultra Low On-Resistance
- 150°C Operating Temperature
- Fast Switching
- Repetitive Avalanche Allowed up to Tjmax
- Some Parameters Are Different from IRF4905S
- Lead-Free

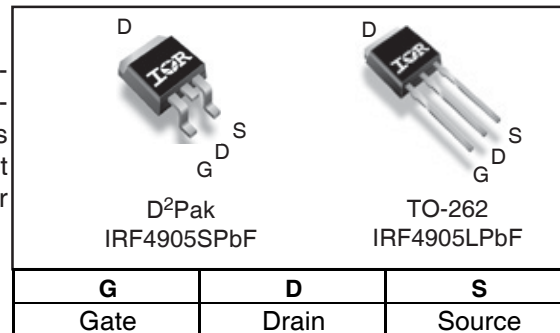
HEXFET® Power MOSFET



$V_{DSS} = -55V$
$R_{DS(on)} = 20m\Omega$
$I_D = -42A$

**Description**

Features of this design are a 150°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in a wide variety of other applications.



**Absolute Maximum Ratings**

	Parameter	Max.	Units
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ (Silicon Limited)	-70	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ (Silicon Limited)	-44	
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ (Package Limited)	-42	
$I_{DM}$	Pulsed Drain Current ①	-280	
$P_D @ T_C = 25^\circ C$	Power Dissipation	170	W
	Linear Derating Factor	1.3	W/°C
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$E_{AS}$ (Thermally limited)	Single Pulse Avalanche Energy ②	140	mJ
$E_{AS}$ (Tested )	Single Pulse Avalanche Energy Tested Value ③	790	
$I_{AR}$	Avalanche Current ④	See Fig.12a, 12b, 15, 16	A
$E_{AR}$	Repetitive Avalanche Energy ⑤		mJ
$T_J$	Operating Junction and	-55 to + 150	°C
$T_{STG}$	Storage Temperature Range		
	Soldering Temperature, for 10 seconds	300 (1.6mm from case )	
	Mounting Torque, 6-32 or M3 screw ⑦	10 lbf•in (1.1N•m)	

**Thermal Resistance**

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case ⑧	—	0.75	
$R_{\theta JA}$	Junction-to-Ambient (PCB Mount, steady state) ⑦ ⑧	—	40	

## Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-55	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-0.054	—	V/°C	Reference to $25^\circ\text{C}$ , $I_D = -1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	20	m $\Omega$	$V_{GS} = -10V, I_D = -42A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	-2.0	—	-4.0	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
gfs	Forward Transconductance	19	—	—	S	$V_{DS} = -25V, I_D = -42A$
$I_{DSS}$	Drain-to-Source Leakage Current	—	—	-25	$\mu A$	$V_{DS} = -55V, V_{GS} = 0V$
		—	—	-200		$V_{DS} = -44V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
$I_{GSS}$	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = -20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = 20V$
$Q_g$	Total Gate Charge	—	120	180	nC	$I_D = -42A$
$Q_{gs}$	Gate-to-Source Charge	—	32	—		$V_{DS} = -44V$
$Q_{gd}$	Gate-to-Drain ("Miller") Charge	—	53	—		$V_{GS} = -10V$ ③
$t_{d(on)}$	Turn-On Delay Time	—	20	—	ns	$V_{DD} = -28V$
$t_r$	Rise Time	—	99	—		$I_D = -42A$
$t_{d(off)}$	Turn-Off Delay Time	—	51	—		$R_G = 2.6\ \Omega$
$t_f$	Fall Time	—	64	—		$V_{GS} = -10V$ ③
$L_S$	Internal Source Inductance	—	7.5	—	nH	Between lead, and center of die contact
$C_{iss}$	Input Capacitance	—	3500	—	pF	$V_{GS} = 0V$
$C_{oss}$	Output Capacitance	—	1250	—		$V_{DS} = -25V$
$C_{rss}$	Reverse Transfer Capacitance	—	450	—		$f = 1.0\text{MHz}$
$C_{oss}$	Output Capacitance	—	4620	—		$V_{GS} = 0V, V_{DS} = -1.0V, f = 1.0\text{MHz}$
$C_{oss}$	Output Capacitance	—	940	—		$V_{GS} = 0V, V_{DS} = -44V, f = 1.0\text{MHz}$
$C_{oss\ eff.}$	Effective Output Capacitance	—	1530	—		$V_{GS} = 0V, V_{DS} = 0V\ \text{to}\ -44V$ ④

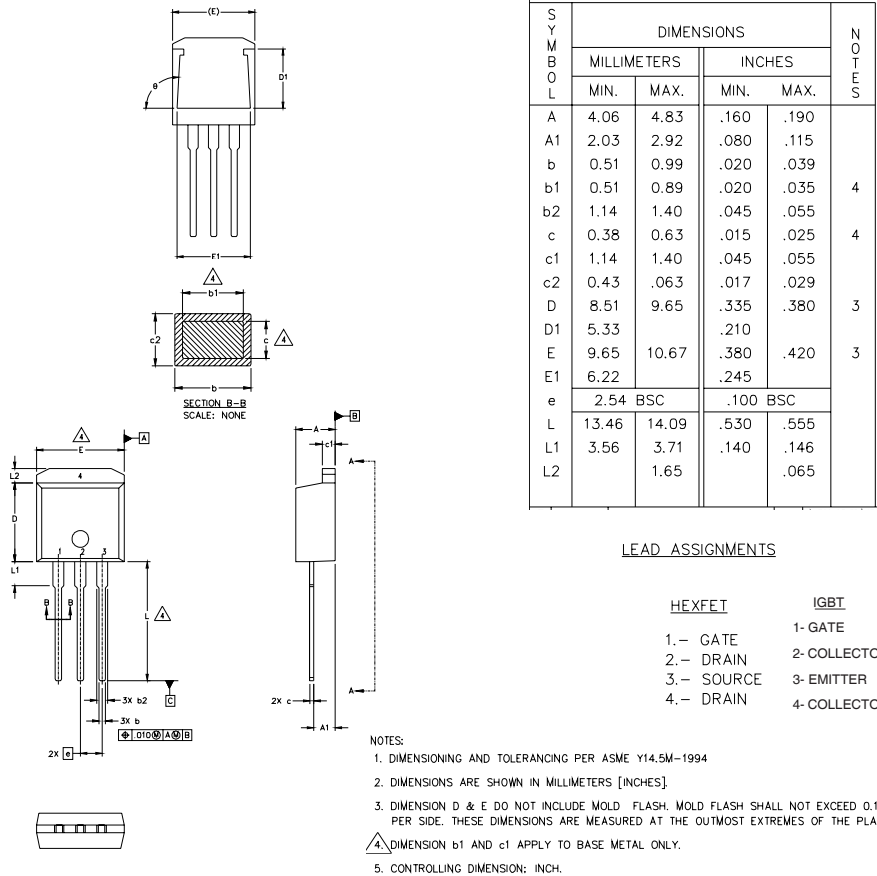
## Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	-42	A	MOSFET symbol showing the integral reverse p-n junction diode.
$I_{SM}$	Pulsed Source Current (Body Diode) ①	—	—	-280		
$V_{SD}$	Diode Forward Voltage	—	—	-1.3	V	$T_J = 25^\circ\text{C}, I_S = -42A, V_{GS} = 0V$ ③
$t_{rr}$	Reverse Recovery Time	—	61	92	ns	$T_J = 25^\circ\text{C}, I_F = -42A, V_{DD} = -28V$
$Q_{rr}$	Reverse Recovery Charge	—	150	220	nC	$di/dt = -100A/\mu s$ ③
$t_{on}$	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by $L_S+L_D$ )				

# IRF4905S/L

International  
**IR** Rectifier

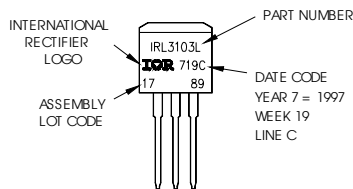
## TO-262 Package Outline (Dimensions are shown in millimeters (inches))



## TO-262 Part Marking Information

EXAMPLE: THIS IS AN IRL3103L  
 LOT CODE 1789  
 ASSEMBLED ON WW 19, 1997  
 IN THE ASSEMBLY LINE "C"

Note: "P" in assembly line position indicates "Lead-Free"



**OR**

