

IRF130

REPETITIVE AVALANCHE AND dv/dt RATED HEXFET[®] TRANSISTORS

Product Summary

Part Number	BVDSS	RDS(on)	ID
IRF130	100V	0.18 Ω	14A

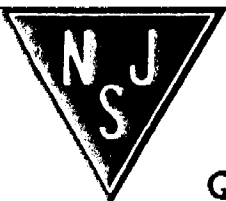
Features:

- Repetitive Avalanche Ratings
- Dynamic dv/dt Rating
- Hermetically Sealed
- Simple Drive Requirements
- Ease of Paralleling

Absolute Maximum Ratings

	Parameter		Units
ID @ VGS = 0V, TC = 25°C	Continuous Drain Current	14	A
ID @ VGS = 0V, TC = 100°C	Continuous Drain Current	9.0	
IDM	Pulsed Drain Current ①	56	
PD @ TC = 25°C	Max. Power Dissipation	75	W
	Linear Derating Factor	0.60	W/°C
VGS	Gate-to-Source Voltage	± 20	V
EAS	Single Pulse Avalanche Energy ②	75	mJ
IAR	Avalanche Current ①	14	A
EAR	Repetitive Avalanche Energy ①	7.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③	5.5	V/ns
TJ	Operating Junction	-55 to 150	°C
TSTG	Storage Temperature Range		
	Lead Temperature	300 (0.063 in. (1.6mm) from case for 10s)	
	Weight	11.5(typical)	g

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Electrical Characteristics @ $T_j = 25^\circ\text{C}$ (Unless Otherwise Specified)

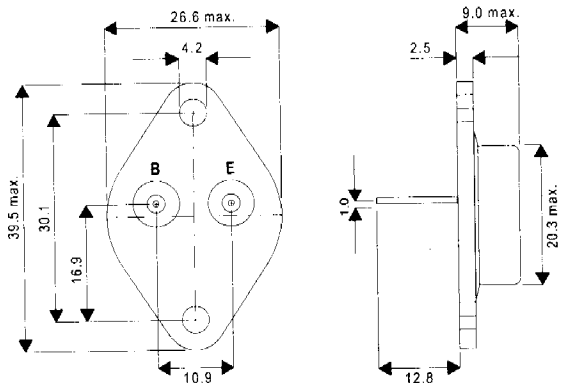
	Parameter	Min	Typ	Max	Units	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	100	—	—	V	$V_{GS} = 0V, I_D = 1.0mA$
$\Delta BV_{DSS}/\Delta T_J$	Temperature Coefficient of Breakdown Voltage	—	0.13	—	$V/^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1.0mA$
$R_{DS(on)}$	Static Drain-to-Source On-State Resistance	—	—	0.18	Ω	$V_{GS} = 10V, I_D = 9.0A$ ④
		—	—	0.21		$V_{GS} = 10V, I_D = 14A$ ④
$V_{GS(th)}$	Gate Threshold Voltage	2.0	—	4.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
g_{fs}	Forward Transconductance	4.6	—	—	S (S)	$V_{DS} > 15V, I_{DS} = 9.0A$ ④
I_{DSS}	Zero Gate Voltage Drain Current	—	—	25	μA	$V_{DS} = 80V, V_{GS} = 0V$
		—	—	250		$V_{DS} = 80V$ $V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Leakage Forward	—	—	100	nA	$V_{GS} = 20V$
I_{GSS}	Gate-to-Source Leakage Reverse	—	—	-100		$V_{GS} = -20V$
Q_g	Total Gate Charge	12	—	35	nC	$V_{GS} = 10V, I_D = 14A$ $V_{DS} = 50V$
Q_{gs}	Gate-to-Source Charge	2.5	—	10		
Q_{gd}	Gate-to-Drain ('Miller') Charge	5.0	—	15		
$t_{d(on)}$	Turn-On Delay Time	—	—	35	ns	$V_{DD} = 50V, I_D = 14A,$ $R_G = 7.5\Omega$
t_r	Rise Time	—	—	80		
$t_{d(off)}$	Turn-Off Delay Time	—	—	60		
t_f	Fall Time	—	—	45		
$L_S + L_D$	Total Inductance	—	6.1	—	nH	Measured from drain lead (6mm/0.25in. from package) to source lead (6mm/0.25in. from package)
C_{iss}	Input Capacitance	—	650	—	pF	$V_{GS} = 0V, V_{DS} = 25V$ $f = 1.0MHz$
C_{oss}	Output Capacitance	—	250	—		
C_{rss}	Reverse Transfer Capacitance	—	44	—		

Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	14	A	
I_{SM}	Pulse Source Current (Body Diode) ①	—	—	56		
V_{SD}	Diode Forward Voltage	—	—	1.5	V	$T_j = 25^\circ\text{C}, I_S = 14A, V_{GS} = 0V$ ④
t_{rr}	Reverse Recovery Time	—	—	300	ns	$T_j = 25^\circ\text{C}, I_F = 14A, di/dt \leq 100A/\mu s$ $V_{DD} \leq 50V$ ④
Q_{RR}	Reverse Recovery Charge	—	—	3.0		
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible. Turn-on speed is substantially controlled by $L_S + L_D$.				

Thermal Resistance

	Parameter	Min	Typ	Max	Units	Test Conditions
R_{thJC}	Junction to Case	—	—	1.67	$^\circ\text{C}/\text{W}$	Typical socket mount
R_{thJA}	Junction to Ambient	—	—	30		



TO3 Package.