

**REPETITIVE AVALANCHE AND  $dv/dt$  RATED  
 HEXFET<sup>®</sup> TRANSISTORS  
 THRU-HOLE (TO-204AA/AE)**

**IRF340  
 400V, N-CHANNEL**

**Product Summary**

Part Number	BVDSS	R <sub>DS(on)</sub>	I <sub>D</sub>
IRF340	400V	0.55Ω	10A

**Features:**

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

**Absolute Maximum Ratings**

	Parameter		Units
I <sub>D</sub> @ V <sub>GS</sub> = 0V, T <sub>C</sub> = 25°C	Continuous Drain Current	10	A
I <sub>D</sub> @ V <sub>GS</sub> = 0V, T <sub>C</sub> = 100°C	Continuous Drain Current	6.0	
I <sub>DM</sub>	Pulsed Drain Current ①	40	
PD @ T <sub>C</sub> = 25°C	Max. Power Dissipation	125	W
	Linear Derating Factor	1.0	W/°C
V <sub>GS</sub>	Gate-to-Source Voltage	+20	V
EAS	Single Pulse Avalanche Energy ②	5.7	mJ
I <sub>AR</sub>	Avalanche Current ①	10	A
EAR	Repetitive Avalanche Energy ①	-	mJ
$dv/dt$	Peak Diode Recovery $dv/dt$ ③	4.0	V/ns
T <sub>J</sub>	Operating Junction	-55 to 150	°C
T <sub>STG</sub>	Storage Temperature Range		
	Lead Temperature	300 (0.063 in. (1.6mm) from case for 10s)	
	Weight	11.5(typical)	g



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## IRF340

### Electrical Characteristics @ T<sub>j</sub> = 25°C (Unless Otherwise Specified)

	Parameter	Min	Typ	Max	Units	Test Conditions
BV <sub>DSS</sub>	Drain-to-Source Breakdown Voltage	400	---	---	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1.0mA
ΔBV <sub>DSS</sub> /ΔT <sub>j</sub>	Temperature Coefficient of Breakdown Voltage	---	0.46	---	V/°C	Reference to 25°C, I <sub>D</sub> = 1.0mA
R <sub>DS(on)</sub>	Static Drain-to-Source On-State Resistance	---	---	0.55	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 6.0A④
		---	---	0.63		V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A ④
V <sub>GS(th)</sub>	Gate Threshold Voltage	2.0	---	4.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250mA
g <sub>fs</sub>	Forward Transconductance	4.9	---	---	S (Ω)	V <sub>DS</sub> > 15V, I <sub>DS</sub> = 6.0A ④
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	---	---	25	μA	V <sub>DS</sub> = 320V, V <sub>GS</sub> = 0V
		---	---	250		V <sub>DS</sub> = 320V V <sub>GS</sub> = 0V, T <sub>j</sub> = 125°C
I <sub>GSS</sub>	Gate-to-Source Leakage Forward	---	---	100	nA	V <sub>GS</sub> = 20V
I <sub>GSS</sub>	Gate-to-Source Leakage Reverse	---	---	-100	nA	V <sub>GS</sub> = -20V
Q <sub>g</sub>	Total Gate Charge	32	---	65	nC	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A V <sub>DS</sub> = 200V
Q <sub>gs</sub>	Gate-to-Source Charge	2.2	---	10		
Q <sub>gd</sub>	Gate-to-Drain ('Miller') Charge	14	---	41		
t <sub>d(on)</sub>	Turn-On Delay Time	---	---	25	ns	V <sub>DD</sub> = 200V, I <sub>D</sub> = 10A, R <sub>G</sub> = 9.1Ω
t <sub>r</sub>	Rise Time	---	---	92		
t <sub>d(off)</sub>	Turn-Off Delay Time	---	---	79		
t <sub>f</sub>	Fall Time	---	---	58		
L <sub>S</sub> + L <sub>D</sub>	Total Inductance	---	6.1	---	nH	Measured from drain lead (6mm/0.25in. from package) to source lead (6mm/0.25in. from package)
C <sub>iss</sub>	Input Capacitance	---	1400	---	pF	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V f = 1.0MHz
C <sub>oss</sub>	Output Capacitance	---	350	---		
C <sub>rss</sub>	Reverse Transfer Capacitance	---	230	---		

### Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	---	---	10	A	
I <sub>SM</sub>	Pulse Source Current (Body Diode) ①	---	---	40		
V <sub>SD</sub>	Diode Forward Voltage	---	---	1.5	V	T <sub>j</sub> = 25°C, I <sub>S</sub> = 10A, V <sub>GS</sub> = 0V ④
t <sub>rr</sub>	Reverse Recovery Time	---	---	600	ns	T <sub>j</sub> = 25°C, I <sub>F</sub> = 10A, di/dt ≤ 100A/μs V <sub>DD</sub> ≤ 50V ④
Q <sub>RR</sub>	Reverse Recovery Charge	---	---	5.6	μC	
t <sub>on</sub>	Forward Turn-On Time	Intrinsic turn-on time is negligible. Turn-on speed is substantially controlled by L <sub>S</sub> + L <sub>D</sub> .				

### Thermal Resistance

	Parameter	Min	Typ	Max	Units	Test Conditions
R <sub>thJC</sub>	Junction to Case	---	---	1.0	°C/W	Typical socket mount
R <sub>thJA</sub>	Junction to Ambient	---	---	30		