International
IOR Rectifier

PD - 95473

SMPS MOSFET

IRFB260NPbF

HEXFET® Power MOSFET

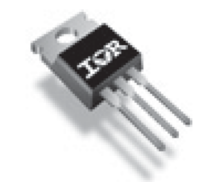
Applications

- High frequency DC-DC converters
- Lead-Free

V_{DSS}	$R_{DS(on)}$ max	I_D
200V	**0.040Ω**	**56A**

Benefits

- Low Gate-to-Drain Charge to Reduce Switching Losses
- Fully Characterized Capacitance Including Effective C_{OSS} to Simplify Design, (See App. Note AN1001)
- Fully Characterized Avalanche Voltage and Current



TO-220AB

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	56	
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V	40	A
I_{DM}	Pulsed Drain Current ①	220	
P_D @T_C = 25°C	Power Dissipation	380	W
	Linear Derating Factor	2.5	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt	Peak Diode Recovery dv/dt ③	10	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 175	
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	°C
	Mounting torqe, 6-32 or M3 screw	10 lbf•in (1.1N•m)	

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	–––	0.40	
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	0.50	–––	°C/W
$R_{\theta JA}$	Junction-to-Ambient	–––	62	

Notes ① through ⑤ are on page 8

Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	200	–––	–––	V	V_{GS} = 0V, I_D = 250μA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	–––	0.26	–––	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	–––	–––	0.040	Ω	V_{GS} = 10V, I_D = 34A ④
$V_{GS(th)}$	Gate Threshold Voltage	2.0	–––	4.0	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source Leakage Current	–––	–––	25	μA	V_{DS} = 200V, V_{GS} = 0V
		–––	–––	250		V_{DS} = 160V, V_{GS} = 0V, T_J = 150°C
I_{GSS}	Gate-to-Source Forward Leakage	–––	–––	100	nA	V_{GS} = 20V
	Gate-to-Source Reverse Leakage	–––	–––	-100		V_{GS} = -20V

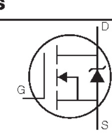
Dynamic @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
g_{fs}	Forward Transconductance	29	–––	–––	S	V_{DS} = 50V, I_D = 34A
Q_g	Total Gate Charge	–––	150	220	nC	I_D = 34A
Q_{gs}	Gate-to-Source Charge	–––	24	37		V_{DS} = 160V
Q_{gd}	Gate-to-Drain ("Miller") Charge	–––	67	100		V_{GS} = 10V ④
$t_{d(on)}$	Turn-On Delay Time	–––	17	–––	ns	V_{DD} = 100V
t_r	Rise Time	–––	64	–––		I_D = 34A
$t_{d(off)}$	Turn-Off Delay Time	–––	52	–––		R_G = 1.8Ω
t_f	Fall Time	–––	50	–––		V_{GS} = 10V ④
C_{iss}	Input Capacitance	–––	4220	–––	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	–––	580	–––		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	–––	140	–––		f = 1.0MHz
C_{oss}	Output Capacitance	–––	5080	–––		V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHz
C_{oss}	Output Capacitance	–––	230	–––		V_{GS} = 0V, V_{DS} = 160V, f = 1.0MHz
C_{oss} eff.	Effective Output Capacitance	–––	500	–––		V_{GS} = 0V, V_{DS} = 0V to 160V ⑤

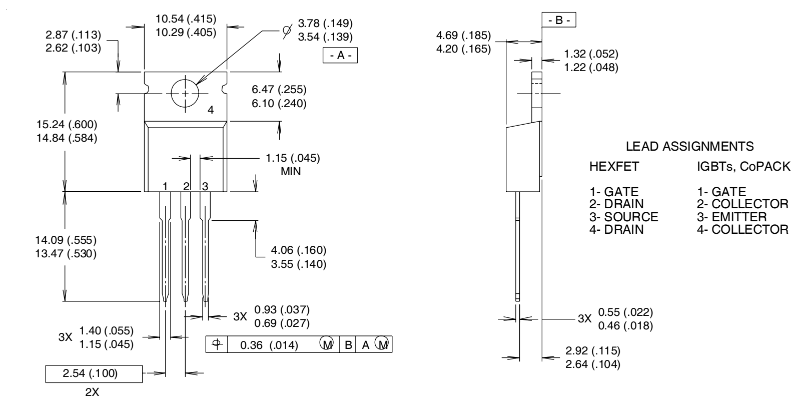
Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy②	–––	450	mJ
I_{AR}	Avalanche Current①	–––	34	A
E_{AR}	Repetitive Avalanche Energy①	–––	38	mJ

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	–––	–––	56	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	–––	–––	220		
V_{SD}	Diode Forward Voltage	–––	–––	1.3	V	T_J = 25°C, I_S = 34A, V_{GS} = 0V ④
t_{rr}	Reverse Recovery Time	–––	240	360	ns	T_J = 25°C, I_F = 34A
Q_{rr}	Reverse RecoveryCharge	–––	2.1	3.2	μC	di/dt = 100A/μs ④
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

TO-220AB Package Outline

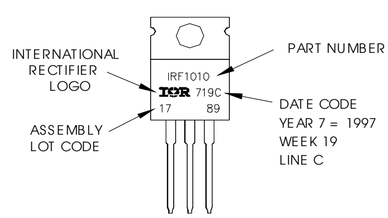


NOTES:
1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
2 CONTROLLING DIMENSION : INCH
3 OUTLINE CONFORMS TO JEDEC OUTLINE TO-220AB.
4 HEATSINK & LEAD MEASUREMENTS DO NOT INCLUDE BURRS.

TO-220AB Part Marking Information

EXAMPLE: THIS IS AN IRF1010
LOT CODE 1789
ASSEMBLED ON WW 19, 1997
IN THE ASSEMBLY LINE "C"

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



Notes:

① Repetitive rating; pulse width limited by max. junction temperature.

② Starting $T_J = 25°C$, L = 0.78mH $R_G = 25\Omega$, $I_{AS} = 34A$.

③ $I_{SD} \leq 34$, di/dt ≤ 480A/µs, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 175°C$

④ Pulse width ≤ 300µs; duty cycle ≤ 2%.

⑤ C_{oss} eff. is a fixed capacitance that gives the same charging time as C_{oss} while V_{DS} is rising from 0 to 80% V_{DSS}

Data and specifications subject to change without notice.
This product has been designed and qualified for the Industrial market.

International
IOR Rectifier