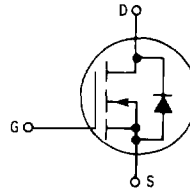


Power Field Effect Transistors
N-Channel Enhancement-Mode
Silicon Gate TMOS

These TMOS Power FETs are designed for low voltage, high speed power switching applications such as switching regulators, converters, solenoid and relay drivers.

- Silicon Gate for Fast Switching Speeds
- Low $r_{DS(on)}$ to Minimize On-Losses
- Rugged — SOA is Power Dissipation Limited
- Source-to-Drain Diode Characterized for Use With Inductive Loads



IRFZ30
IRFZ32

TMOS POWER FETs
25 and 30 AMPERES
 $r_{DS(on)} = 0.05 \text{ OHM}$
50 VOLTS
 $r_{DS(on)} = 0.07 \text{ OHM}$



CASE 221A-04
(TO-220AB)

MAXIMUM RATINGS

Rating	Symbol	Device		Unit
		IRFZ30	IRFZ32	
Drain-Source Voltage	V_{DSS}	50		Vdc
Drain-Gate Voltage ($R_{GS} = 1 \text{ M}\Omega$)	V_{DGR}	50		Vdc
Gate-Source Voltage	V_{GS}	± 20		Vdc
Drain Current — Continuous ($\alpha T_C = 25^\circ\text{C}$)	I_D	30	25	Adc
— Continuous ($\alpha T_C = 100^\circ\text{C}$)		19	16	
— Pulsed ($\alpha T_C = 25^\circ\text{C}$)		80	60	
Total Power Dissipation ($\alpha T_C = 25^\circ\text{C}$) Derate above 25°C	P_D	75	0.6	Watts W $^\circ\text{C}$
Operating and Storage Temperature Range	T_J, T_{stg}	- 65 to 150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance — Junction to Case — Junction to Ambient	$R_{\theta JC}$	1.67 62.5	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes, 1/8" from Case for 5 Seconds	T_L	300	$^\circ\text{C}$

See the MTP30N05E Designer's Data Sheet for a complete set of design curves for the product on this data sheet

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IRFZ30,32

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage (V _{GS} = 0, I _D = 0.25 mA)	V _{(BR)DSS}	50	—	V _{dc}
Zero Gate Voltage Drain Current (V _{DS} = Rated V _{DSS} , V _{GS} = 0) (V _{DS} = 0.8 Rated V _{DSS} , V _{GS} = 0, T _J = 125°C)	I _{DSS}	—	0.2 1	mAdc
Gate-Body Leakage Current, Forward (V _{GSF} = 20 V _{dc} , V _{DS} = 0)	I _{GSSF}	—	100	nAdc
Gate-Body Leakage Current, Reverse (V _{GSR} = 20 V _{dc} , V _{DS} = 0)	I _{GSSR}	—	100	nAdc

ON CHARACTERISTICS*

Gate Threshold Voltage (V _{DS} = V _{GS} , I _D = 0.25 mA)	V _{GS(th)}	2	4	V _{dc}
Static Drain-Source On-Resistance (V _{GS} = 10 V _{dc} , I _D = 16 Adc)	r _{DS(on)}	—	0.05 0.07	Ohm
On-State Drain Current (V _{GS} = 10 V) (V _{DS} ≥ 1.5 V _{dc}) (V _{DS} ≥ 1.75 V _{dc})	I _{D(on)}	30 25	—	A _{dc}
Forward Transconductance (V _{DS} ≥ 1.5 V, I _D = 16 A) (V _{DS} ≥ 1.75 V, I _D = 16 A)	g _{FS}	9 9	—	mhos

DYNAMIC CHARACTERISTICS

Input Capacitance	(V _{DS} = 25 V, V _{GS} = 0, f = 1 MHz)	C _{iss}	—	1600	pF
Output Capacitance		C _{oss}	—	800	
Reverse Transfer Capacitance		C _{rss}	—	200	

SWITCHING CHARACTERISTICS*

Turn-On Delay Time	(V _{DD} ≈ 25 V, I _D = 16 Apk, R _{gen} ≈ 50 Ohms)	t _{d(on)}	—	25	ns
Rise Time		t _r	—	35	
Turn-Off Delay Time		t _{d(off)}	—	45	
Fall Time		t _f	—	35	
Total Gate Charge	(V _{DS} = 0.8 Rated V _{DSS} , V _{GS} = 10 V _{dc} , I _D = Rated I _D)	Q _g	26 (Typ)	30	nC
Gate-Source Charge		Q _{gs}	14 (Typ)	—	
Gate-Drain Charge		Q _{gd}	12 (Typ)	—	

SOURCE-DRAIN DIODE CHARACTERISTICS*

Forward On-Voltage	(I _S = Rated I _D , V _{GS} = 0)	V _{SD}	1.2 (Typ)	1.5(1)	V _{dc}
Forward Turn-On Time		t _{on}	Limited by stray inductance		
Reverse Recovery Time		t _{rr}	150 (Typ)	—	ns

*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
(1) Add 0.1 V for IRFZ30.

**CASE 221A-04
(TO-220AB)**

STYLE S
PIN 1: GATE
2: DRAIN
3: SOURCE
4: DRAIN

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIM Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.48	15.75	0.570	0.620
B	9.56	10.28	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.64	0.88	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.42	2.66	0.095	0.105
H	2.80	3.83	0.110	0.155
J	0.36	0.56	0.014	0.022
K	12.70	14.27	0.500	0.562
L	1.15	1.39	0.045	0.055
M	4.83	5.33	0.190	0.210
N	2.54	3.04	0.100	0.120
R	2.04	2.79	0.080	0.110
S	1.15	1.28	0.045	0.055
T	5.97	6.47	0.235	0.255
U	0.00	1.27	0.000	0.050
V	1.15	—	0.045	—
Z	—	2.04	—	0.080