TMOS Field Effect Transistor Dual In-Line Package

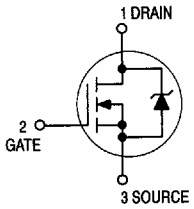
N-Channel Enhancement Mode

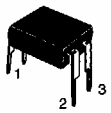
- Ideal for Peripheral Control Applications
- Intermediate 1 Watt Power Capability
- Standard DIP Outline

IRFD210
IRFD213

TMOS FET TRANSISTORS FET DIP

TMOS®





CASE 370-01, STYLE 1

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Rating	Symbol	IRFD210	IRFD213	Unit
Drain-Source Voltage	V_{DSS}	200	150	Vdc
Drain-Gate Voltage (R_{GS} = 20 kΩ)	V_{DGR}	200	150	Vdc
Gate-Source Voltage	V_{GS}	±20		Vdc
Drain Current — Continuous T_C = 25°C — Pulsed	I_D I_{DM}	0 6 2.5	0.45 1.8	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.0 0.008		Watts mW/°C
Operating and Storage Temperature Range	T_J, T_{stg}	−55 to +150		°C

THERMAL CHARACTERISTICS

Thermal Resistance — Junction-to-Ambient	$R_{\theta JA}$	120		°C/W

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 250 μA)	IRFD210 IRFD213	$V_{(BR)DSS}$	200 150	— —	— —	Vdc
Zero Gate Voltage Drain Current (V_{DSS} = Rated V_{DSS}, V_{GS} = 0 V)		I_{DSS}	—	—	250	μAdc
Gate-Body Leakage Current, Forward (V_{GSF} = 20 V)		I_{GSSF}	—	—	500	nAdc
Gate-Body Leakage Current, Reverse (V_{GSR} = −20 V)		I_{GSSR}	—	—	−500	nAdc
ON CHARACTERISTICS						
Gate Threshold Voltage (I_D = 250 μA, V_{DS} = V_{GS})		$V_{GS(th)}$	2.0	—	4 0	Vdc
Static Drain-Source On-Resistance (1) (V_{GS} = 10 Vdc, I_D = 0 3 A)	IRFD210 IRFD213	$R_{DS(on)}$	— —	— —	1 5 2 4	Ohms
On-State Drain Current (1) (V_{GS} = 10 V, V_{DS} = 5.0 V)	IRFD210, IRFD211 IRFD212, IRFD213	$I_{D(on)}$	1 5 2.4	— —	— —	Adc
Forward Transconductance (1) (I_D = 0 3 A, V_{DS} = 5 0 V)		g_{FS}	0.5	—	—	mhos
CAPACITANCE						
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0, f = 1.0 MHz)	C_{iss}	—	—	150	pF
Output Capacitance		C_{oss}	—	—	80	
Reverse Transfer Capacitance		C_{rss}	—	—	25	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	(V_{DS} ≈ 0 5 $V_{(BR)DSS}$, I_D = 0.3 A, Z_o = 50 Ω)	$t_{d(on)}$	—	—	15	ns
Rise Time		t_r	—	—	25	
Turn-Off Delay Time		$t_{d(off)}$	—	—	15	
Fall Time		t_f	—	—	15	
SOURCE-DRAIN DIODE CHARACTERISTICS						
Diode Forward Voltage (V_{GS} = 0)	I_S = 0 6 A, IRFD210 I_S = 0 45 A, IRFD213	V_F	— —	— —	2 0 1.8	Vdc
Continuous Source Current, Body Diode	IRFD210 IRFD213	I_S	— —	— —	0 6 0.45	Adc
Pulsed Source Current, Body Diode	IRFD210 IRFD213	I_{SM}	— —	— —	2.5 1 8	A
Forward Turn-On Time	(I_S = Rated I_S, V_{GS} = 0)	t_{on}	negligible			ns
Reverse Recovery Time		t_{rr}	—	290	—	

1 Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2 0%