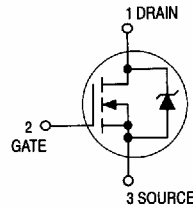


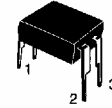
**TMOS Field Effect Transistor**  
**Dual In-Line Package**  
**N-Channel Enhancement Mode**

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



**IRFD120**  
**IRFD123**

**TMOS FET**  
**TRANSISTORS**  
**FET DIP**



**CASE 370-01, STYLE 1**

**MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Rating	Symbol	IRFD120	IRFD123	Unit
Drain-Source Voltage	$V_{DSS}$	100	60	Vdc
Drain-Gate Voltage ( $R_{GS} = 20\text{ k}\Omega$ )	$V_{DGR}$	100	60	Vdc
Gate-Source Voltage	$V_{GS}$	$\pm 20$		Vdc
Drain Current — Continuous $T_C = 25^\circ\text{C}$ — Pulsed	$I_D$ $I_{DM}$	1.3 5.2	1.1 4.4	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.0 8.0		Watts mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	$T_J, T_{stg}$	-55 to +150		$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

Thermal Resistance — Junction-to-Ambient	$R_{\theta JA}$	120	$^\circ\text{C/W}$
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**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage ( $V_{GS} = 0, I_D = 250 \mu\text{A}$ )	IRFD120 IRFD123	$V_{(BR)DSS}$	100 60	—	—	Vdc
Zero Gate Voltage Drain Current ( $V_{DSS} = \text{Rated } V_{DSS}, V_{GS} = 0 \text{ V}$ )		$I_{DSS}$	—	—	250	$\mu\text{Adc}$
Gate-Body Leakage Current, Forward ( $V_{GSF} = 20 \text{ V}$ )		$I_{GSSF}$	—	—	500	nAdc
Gate-Body Leakage Current, Reverse ( $V_{GSR} = -20 \text{ V}$ )		$I_{GSSR}$	—	—	-500	nAdc
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage ( $I_D = 250 \mu\text{A}, V_{DS} = V_{GS}$ )		$V_{GS(th)}$	2.0	—	4.0	Vdc
Static Drain-Source On-Resistance (1) ( $V_{GS} = 10 \text{ Vdc}, I_D = 0.6 \text{ A}$ )	IRFD120 IRFD123	$R_{DS(on)}$	—	—	0.3 0.4	Ohms
On-State Drain Current (1) ( $V_{GS} = 10 \text{ V}, V_{DS} = 5.0 \text{ V}$ )	IRFD120 IRFD123	$I_{D(on)}$	1.3 1.1	—	—	Adc
Forward Transconductance (1) ( $I_D = 0.6 \text{ A}, V_{DS} = 5.0 \text{ V}$ )		$g_{FS}$	0.9	—	—	mhos
<b>CAPACITANCE</b>						
Input Capacitance	$(V_{DS} = 25 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz})$	$C_{iss}$	—	—	600	pF
Output Capacitance		$C_{oss}$	—	—	400	
Reverse Transfer Capacitance		$C_{rss}$	—	—	100	
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$(V_{DS} = 0.5 V_{(BR)DSS}, I_D = 0.6 \text{ A}, Z_o = 50 \Omega)$	$t_{d(on)}$	—	—	40	ns
Rise Time		$t_r$	—	—	70	
Turn-Off Delay Time		$t_{d(off)}$	—	—	100	
Fall Time		$t_f$	—	—	70	
<b>SOURCE-DRAIN DIODE CHARACTERISTICS</b>						
Diode Forward Voltage ( $V_{GS} = 0$ )	$I_S = 1.3 \text{ A}, \text{IRFD120}$ $I_S = 1.1 \text{ A}, \text{IRFD123}$	$V_F$	—	—	2.5 2.3	Vdc
Continuous Source Current, Body Diode	IRFD120 IRFD123	$I_S$	—	—	1.3 1.1	Adc
Pulsed Source Current, Body Diode	IRFD120 IRFD123	$I_{SM}$	—	—	5.2 4.4	A
Forward Turn-On Time	$(I_S = \text{Rated } I_S, V_{GS} = 0)$	$t_{on}$	negligible			ns
Reverse Recovery Time		$t_{rr}$	—	280	—	

1. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .