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J175 / J176 / MMBFJ175 / MMBFJ176 / MMBFJ177 P-Channel Switch

Description

This device is designed for low-level analog switching sample-and-hold circuits and chopper-stabilized amplifiers. Sourced from process 88.



Figure 1. J175 / J176 Device Package



Mark: 6W / 6X / 6Y Note: Source & drain are interchangeable.

Figure 2. MMBFJ175 / 176 / 177 Device Package

Ordering Information

Part Number	Marking	Package	Packing Method	
J175_D26Z	J175	TO-92 3L	Tape and Reel	
J176_D74Z	J176	TO-92 3L	Ammo	
MMBFJ175	6W	SOT-23 3L	Tape and Reel	
MMBFJ176	6X	SOT-23 3L	Tape and Reel	
MMBFJ177	6Y	SOT-23 3L	Tape and Reel	

Absolute Maximum Ratings^{(1),(2)}

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^{\circ}$ C unless otherwise noted.

Symbol	Parameter	Value	Unit
V _{DG}	Drain-Gate Voltage	-30	V
V _{GS}	Gate-Source Voltage	30	V
I _{GF}	Forward Gate Current	50	mA
T _J , T _{STG}	Operating and Storage Junction Temperature Range	-55 to + 150	°C

Notes:

- 1. These ratings are based on a maximum junction temperature of 150°C.
- 2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty cycle operations.

Thermal Characteristics

Values are at $T_A = 25^{\circ}C$ unless otherwise noted.

			Ma		
Symbol	Parameter	J175 / J176 ⁽³⁾	MMBFJ175 / MMBFJ176 / MMBFJ177 ⁽³⁾	Unit	
р	Total Device Dissipation		350	225	mW
PD	Derate Above 25°C		2.8	1.8	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case		125		°C/W
R _{0JA}	Thermal Resistance, Junction to Ambient 357		556	°C/W	

Note:

3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

Values are at $T_A = 25^{\circ}C$ unless otherwise noted.

Symbol	Parameter	Conditions		Min.	Max.	Unit
Off Charact	eristics				•	•
V _{(BR)GSS}	Gate-Source Breakdown Voltage	I_{G} = 1.0 μ A, V_{DS} = 0		30		V
I _{GSS}	Gate Reverse Current	V _{GS} = 20 V, V _{DS} = 0	$V_{GS} = 20 \text{ V}, V_{DS} = 0$		1.0	nA
V _{GS(off)}	Gate-Source Cut-Off Voltage	V _{DS} = -15 V, I _D = -10 nA	J175 / MMBFJ175	3.0	6.0	V
			J176 / MMBFJ176	1.0	4.0	
			MMBFJ177	0.8	2.5	
On Charact	On Characteristics					
I _{DSS}	Zero-Gate Voltage Drain Current ⁽⁴⁾	V _{DS} = -15 V, I _{GS} = 0	J175 / MMBFJ175	-7.0	-60.0	mA
			J176 / MMBFJ176	-2.0	-25.0	
			MMBFJ177	-1.5	-20.0	
r _{DS(on)}	Drain-Source On Resistance	$V_{DS} \le 0.1 \text{ V}, V_{GS} = 0$	J175 / MMBFJ175		125	
			J176 / MMBFJ176		250	Ω
			MMBFJ177		300	

Note:

4. Pulse test: pulse width \leq 300 µs, duty cycle \leq 2.0%.



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Typical Performance Characteristics (Continued)

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J175 / J176 / MMBFJ175 / MMBFJ176 / MMBFJ177 — P-Channel Switch



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