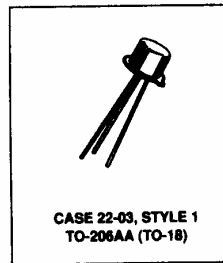


**SEMICONDUCTOR**  
**TECHNICAL DATA**

**2N4856**  
**2N4857**  
**2N4858**

**P-Channel, Small-Signal  
 Field Effect Transistors (JFETs)**

...designed for general-purpose switching applications.



MAXIMUM RATINGS			
Rating	Symbol	Value	Unit
Gate-Source Voltage	V <sub>GS</sub>	40	V <sub>dc</sub>
Drain-Source Voltage	V <sub>DS</sub>	40	V <sub>dc</sub>
Drain-Gate Voltage	V <sub>DG</sub>	40	V <sub>dc</sub>
Gate Current	I <sub>G</sub>	50	mAdc
Device Dissipation	P <sub>T</sub>	0.36	Watts
@ T <sub>A</sub> = 25°C		2.06	mW/°C
Derate above 25°C		1.8	Watts
@ T <sub>C</sub> = 25°C		10.3	mW/°C
Storage Temperature Range	T <sub>stg</sub>	-65 to +200	°C

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ELECTRICAL CHARACTERISTICS — continued (T <sub>A</sub> = 25°C unless otherwise noted.)					
Characteristic	Symbol	Min	Max	Unit	
<b>OFF CHARACTERISTICS</b>					
Gate-Source Breakdown Voltage (I <sub>G</sub> = -1.0 μAdc, V <sub>DS</sub> = 0)	V <sub>(BR)GSS</sub>	-40	—	Vdc	
Gate Reverse Current (V <sub>GS</sub> = -20 Vdc, V <sub>DS</sub> = 0 Vdc) (V <sub>GS</sub> = -20 Vdc, V <sub>DS</sub> = 0, T <sub>A</sub> = 150°C)	I <sub>GSS</sub>	—	-0.25 -0.5	nAdc μAdc	
Gate Source Cutoff Voltage (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 0.5 nAdc)	V <sub>GS(off)</sub>	-4.0 -2.0 -0.8	-10 -6.0 -4.0	Vdc	
Drain Cutoff Current (V <sub>GS</sub> = -10 Vdc, V <sub>DS</sub> = 15 Vdc) (V <sub>GS</sub> = -10 Vdc, V <sub>DS</sub> = 15 Vdc, T <sub>A</sub> = 150°C)	I <sub>D(off)</sub>	—	0.25 0.5	nAdc μAdc	
<b>ON CHARACTERISTICS</b>					
Zero-Gate-Voltage Drain Current <sup>(1)</sup> (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0)	I <sub>DSS</sub>	50 20 8.0	175 100 80	mAdc	
Drain-Source On-Voltage (I <sub>D</sub> = 20 mAdc, V <sub>GS</sub> = 0) (I <sub>D</sub> = 10 mAdc, V <sub>GS</sub> = 0) (I <sub>D</sub> = 5.0 mAdc, V <sub>GS</sub> = 0)	V <sub>DS(on)</sub>	—	0.75 0.5 0.5	Vdc	
<b>SMALL-SIGNAL CHARACTERISTICS</b>					
Drain-Source "ON" Resistance <sup>(1)</sup> (I <sub>D</sub> = 100 μA ac rms, I <sub>D</sub> = 0, V <sub>GS</sub> = 0, f = 1.0 kHz)	r <sub>ds(on)</sub>	—	25 40 60	ohms	
Input Capacitance (V <sub>GS</sub> = -10 Vdc, V <sub>DS</sub> = 0, f = 1.0 MHz)	C <sub>iss</sub>	—	18	pF	
Reverse Transfer Capacitance (V <sub>GS</sub> = -10 Vdc, V <sub>DS</sub> = 0, f = 1.0 MHz)	C <sub>rss</sub>	—	8.0	pF	
<b>SWITCHING CHARACTERISTICS (See Figure 1)</b>					
Turn-On Delay Time	t <sub>d(on)</sub>	—	6.0 6.0 10	ns	
Rise Time	t <sub>r</sub>	—	3.0 4.0 10	ns	
Turn-Off Time	t <sub>d(off)</sub>	—	25 50 100	ns	
<b>ASSURANCE TESTING (Pre/Post Burn-In)</b>					
<b>Burn-In Conditions: T<sub>A</sub> = 175°C, V<sub>GS</sub> = 80% of Rated, V<sub>DS</sub> = 0</b>					
Characteristics Tested	Symbol	Initial and End Point Limits		Unit	
		Min	Max		
Drain-Source On-Resistance <sup>(1)</sup> (I <sub>D</sub> = 0, V <sub>DS</sub> = 0, f = 1.0 kHz, I <sub>D</sub> = 100 μAdc rms)	r <sub>DS(on)</sub>	—	25 40 60	ohms	
Drain Cutoff Current (V <sub>GS</sub> = -10 Vdc, V <sub>DS</sub> = 15 Vdc)	I <sub>D(off)</sub>	—	0.25	nAdc	
Gate Reverse Current (V <sub>GS</sub> = -20 Vdc, V <sub>DS</sub> = 10 Vdc)	I <sub>GSS</sub>	—	0.25	nAdc	
Zero-Gate-Voltage Drain Current <sup>(1)</sup> (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0)	I <sub>DSS</sub>	50 20 8.0	175 100 80	mAdc	
<b>Delta from Pre-Burn-In Measured Values</b>					
Delta Drain-Source On-Resistance	Δr <sub>DS(on)</sub>	—	±20	% of Initial Value	
Delta Gate Reverse Current	ΔI <sub>GSS</sub>	—	±100 or ±0.1 whichever is greater	% of Initial Value nAdc	
Delta Drain Cutoff Current	ΔI <sub>D(off)</sub>	—	±100 or ±0.1 whichever is greater	% of Initial Value nAdc	
Delta Zero-Gate-Voltage Drain Current	ΔI <sub>DSS</sub>	—	±15	% of Initial Value	

(1) Pulsed. Pulse Width 100 μs. Duty Cycle ≤ 10%.

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