



**THE DATASHEET OF**  
**2N4857**



# N-Channel JFET

2N4856 2N4856A  
 2N4857 2N4857A  
 2N4858 2N4858A

**SOLID STATE INC.**  
 46 FARRAND STREET  
 BLOOMFIELD, NEW JERSEY 07003  
 www.solidstateinc.com

## Common Uses

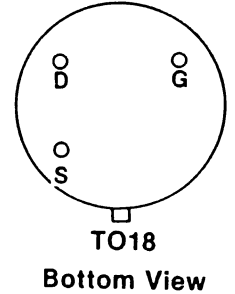
Analog switches  
 Choppers  
 Commutators

## Absolute Maximum Ratings (25 °C)

Gate-source ..... - 40 V  
 Gate-drain ..... - 40 V  
 Drain-source ..... ± 40 V  
 Gate current ..... 10 mA  
 Device dissipation  
 (at or below 25 °C free air temperature) ..... 300 mW  
 Storage range ..... - 65 ° to + 200 °C

## Features

Low on resistance  
 High off resistance  
 High speed switch



## Electrical Characteristics (25 °C unless specified)

### DC

Characteristic	Symbol	Test Conditions	2N4856 2N4856A		2N4857 2N4857A		2N4858 2N4858A		Units
			Min	Max	Min	Max	Min	Max	
1. Gate reverse current	$I_{GSS}$	$V_{DS} = 0, V_{GS} = -20 V$		-0.25		-0.25		-0.25	nA
2.			$T_A = 150 °C$		-0.5		-0.5		-0.5
3. Gate-channel break-down voltage	$BV_{GSS}$	$V_{DS} = 0, I_G = -1 µA$	-40		-40		-40		V
4. Gate-source cut off voltage	$V_{GS (off)}$	$V_{DS} = 15 V, I_D = 0.5 nA$	-4	-10	-2	-6	0.8	4	
5. Drain-source on voltage	$V_{DS (on)}$	$V_{GS} = 0$	$I_D = 20 mA$						
6. Drain-source on voltage			$I_D = 10 mA$				0.50		
7.			$I_D = 5 mA$						0.50
8. Saturation drain current (Note 1)	$I_{DSS}$	$V_{DS} = 15 V, V_{GS} = 0$	50		20	100	8	80	mA
9. Drain cut off current	$I_D (off)$	$V_{DS} = 15 V, V_{GS} = -10 V$		0.25		0.25		0.25	nA
10.			$T_A = 150 °C$		0.50		0.50		0.50

### AC

Characteristic	Symbol	Test Conditions	2N4856, 7, 8		2N4856A, 7A, 8A		2N4856, 7, 8		2N4856A, 7A, 8A		Units
			Min	Max	Min	Max	Min	Max			
11. Input capacitance	$C_{iss}$	$V_{DS} = 0, V_{GS} = -10 V$	$f = 1 MHz$			18		18		18	pF
12.			$f = 1 MHz$			10		10		10	
13. Feedback capacitance	$C_{rss}$		$f = 1 MHz$			8		8		8	
14.			$f = 1 MHz$			4		3.5		3.5	
15. Drain-source on resistance	$r_{ds (on)}$	$V_{DS} = 0, I_D = 0$		25		40		60		ohms	

### Switching

Characteristic	Symbol	Test Conditions	Min	Max	Min	Max	Min	Max	Units
			16. Turn-on delay time	$t_d (on)$	$V_{DD} = 10 V, V_{GS (on)} = 0$		5		
17. Rise time	$t_r$	$I_D (on) \quad V_{GS (off)} \quad R_L$		3		4		8	
18. Turn-off time	$t (off)$			20		40		80	

Notes: 1. Pulse test required, pulse width = 300µs, duty cycle ≤ 3%.

# N-Channel JFET

FOR

Analog switches  
Chopper  
Commutators

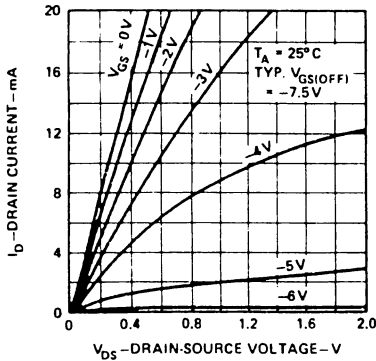
PACKAGES:

TO18

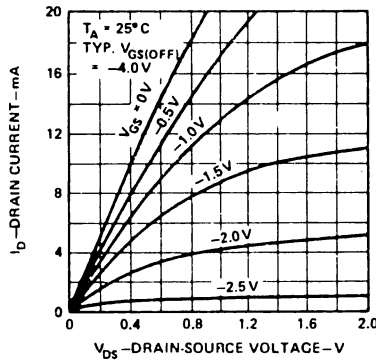
2N4856-61  
2N4856A-61A

## Typical Characteristics (25°C unless otherwise noted)

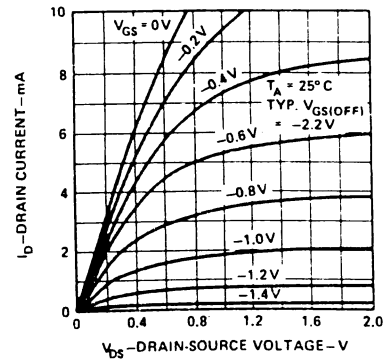
COMMON DRAIN - SOURCE CHARACTERISTICS



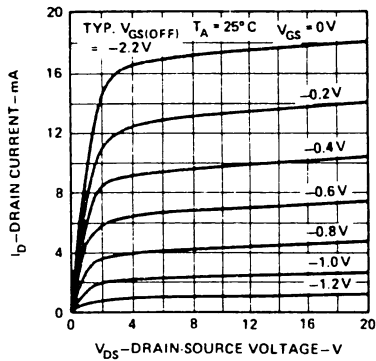
COMMON DRAIN - SOURCE CHARACTERISTICS



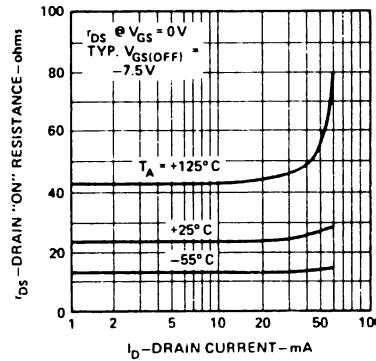
COMMON DRAIN - SOURCE CHARACTERISTICS



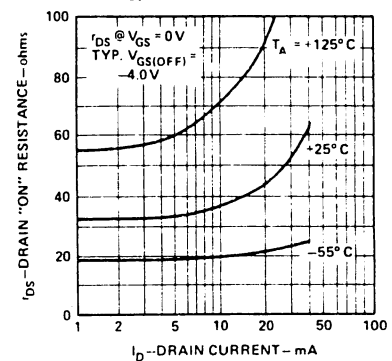
COMMON DRAIN - SOURCE CHARACTERISTICS



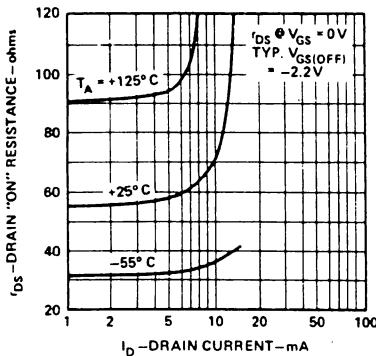
DRAIN - SOURCE "ON" RESISTANCE VS. DRAIN CURRENT



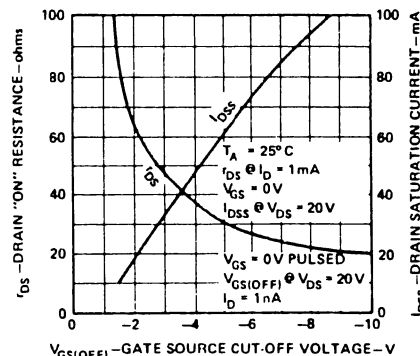
DRAIN - SOURCE "ON" RESISTANCE VS. DRAIN CURRENT



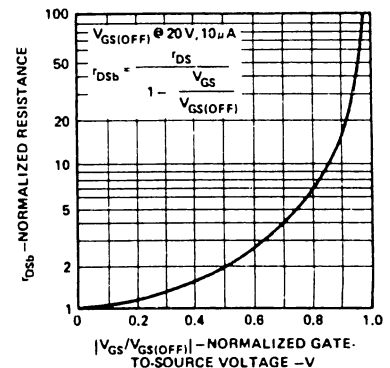
DRAIN - SOURCE "ON" RESISTANCE VS. DRAIN CURRENT



"ON" RESISTANCE/DRAIN CURRENT VS. CUT-OFF VOLTAGE

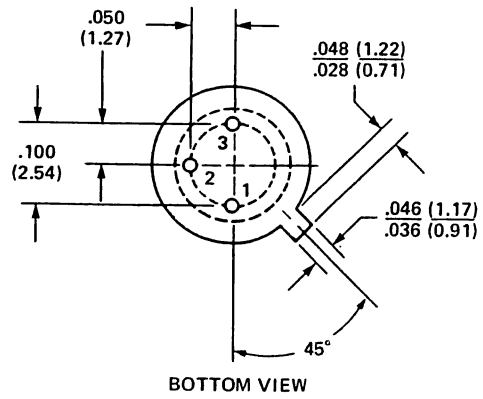
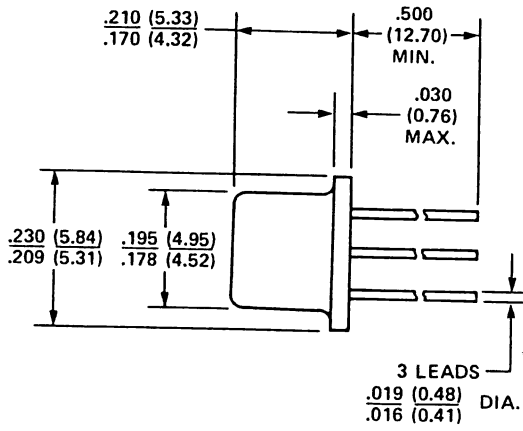


NORMALIZED DRAIN - SOURCE RESISTANCE VS. GATE - SOURCE VOLTAGE





# Packaging Information

TO-18  
(3 PIN)





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