2N4856, 2N4857, 2N4858, 2N4859, 2N4860, 2N4861

N-Channel Silicon Junction Field-Effect Transistor

- Choppers
- Commutators
- Analog Switches

Absolute maximum ratings at T_A = 25°C

	2N4856, 2N4857, 2N4858	2N4859, 2N4860, 2N4861
Reverse Gate Source Voltage	– 40 V	– 30 V
Reverse Gate Drain Voltage	– 40 V	– 30 V
Continuous Device Dissipation	1.8 W	1.8 W
Power Derating	10 mW/°C	10 mW/°C
Continuous Forward Gate Current	50 mA	50 mA

At 25°C free air temperature: Static Electrical Characteristics		2N4856 2N4859		2N4857 2N4860		2N4858 2N4861		Process NJ132		
		Min	Max	Min	Max	Min	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage **2N4856, 2N4857, 2N4858**	$V_{(BR)GSS}$		– 40		– 40		– 40	V	I_G = – 1 µA, V_{DS} = ØV	
2N4859, 2N4860, 2N4861			– 30		– 30		– 30	V	I_G = – 1 µA, V_{DS} = ØV	
Gate Reverse Current **2N4856, 2N4857, 2N4858**	I_{GSS}		– 250		– 250		– 250	pA	V_{GS} = – 20V, V_{DS} = ØV	
			– 500		– 500		– 500	nA	V_{GS} = – 20V, V_{DS} = ØV	T_A = 150°C
Gate Reverse Current **2N4859, 2N4860, 2N4861**	I_{GSS}		– 250		– 250		– 250	pA	V_{GS} = – 15V, V_{DS} = ØV	
			– 500		– 500		– 500	nA	V_{GS} = – 15V, V_{DS} = ØV	T_A = 150°C
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 4	– 10	– 2	– 6	– 0.8	– 4	V	V_{DS} = 15V, I_D = 0.5 nA	
Drain Saturation Current (Pulsed)	I_{DSS}	50		20	100	8	80	mA	V_{DS} = 15V, V_{GS} = ØV	
Drain Cutoff Current	$I_{D(OFF)}$		250		250		250	pA	V_{DS} = 15V, V_{GS} = – 10V	
			500		500		500	nA	V_{DS} = 15V, V_{GS} = – 10V	T_A = 150°C
Drain Source ON Voltage	$V_{DS(ON)}$		0.75 (20)		0.5 (10)		0.5 (5)	V (mA)	V_{GS} = ØV, I_D = ( )	
Dynamic Electrical Characteristics										
Common Source ON Resistance	$r_{ds(on)}$		25		40		60	Ω	V_{GS} = ØV, I_D = Ø A	f = 1 kHz
Common Source Input Capacitance	C_{iss}		18		18		18	pF	V_{DS} = ØV, V_{GS} = – 10V	f = 1 MHz
Common Source Reverse Transfer Capacitance	C_{rss}		8		8		8	pF	V_{DS} = ØV, V_{GS} = – 10V	f = 1 MHz
Switching Characteristics										
Turn ON Delay Time	$t_{d(on)}$		6 (20) [–10]		6 (10) [– 6]		10 (5) [– 4]	ns (mA) [V]	V_{DD} = 10V, V_{GS} = ØV $I_{D(ON)}$ = ( ) $V_{GS(OFF)}$ = [ ] **(2N4856, 2N4859)** R_L = 465Ω **(2N4857, 2N4860)** R_L = 953Ω **(2N4858, 2N4861)** R_L = 1910Ω	
Rise Time	t_r		3 (20) [–10]		4 (10) [– 6]		10 (5) [– 4]	ns (mA) [V]		
Turn OFF Delay Time	$t_{d(off)}$		25 (20) [–10]		50 (10) [– 6]		100 (5) [– 4]	ns (mA) [V]		

TO-18 Package
See Section G for Outline Dimensions

Pin Configuration
1 Source, 2 Drain, 3 Gate &Case

Surface Mount
SMP4856, SMP4857, SMP4858, SMP4859, SMP4860, SMP4861

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