

J111, J112, J113

N-Channel Silicon Junction Field-Effect Transistor

- Choppers
- Commutators
- Analog Switches

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Reverse Gate Drain Voltage

– 35 V

Continuous Forward Gate Current

50 mA

Continuous Device Power Dissipation

360 mW

Power Derating

3.27 mW/°C

At 25°C free air temperature
Static Electrical Characteristics

		J111		J112		J113		Process NJ132		
		Min	Max	Min	Max	Min	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 35		– 35		– 35		V	$I_G = -1\mu\text{A}$, $V_{DS} = 0\text{V}$	
Gate Reverse Current	I_{GSS}		– 1		– 1		– 1	nA	$V_{GS} = -15\text{V}$, $V_{DS} = 0\text{V}$	
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 3	– 10	– 1	– 5		– 3	V	$V_{DS} = 5\text{V}$, $I_D = 1\mu\text{A}$	
Drain Saturation Current (Pulsed)	I_{DSS}	20		5		2		mA	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	
Drain Cutoff Current	$I_{D(OFF)}$		– 1		– 1		– 1	nA	$V_{DS} = 15\text{V}$, $V_{GS} = -10\text{V}$	

Dynamic Electrical Characteristics

Drain Source ON Resistance	$r_{ds(on)}$		30		50		100	Ω	$V_{GS} = 0\text{V}$, $V_{DS} = 0.1\text{V}$	$f = 1\text{ kHz}$
Drain Gate Capacitance	C_{dg}		5		5		5	pF	$V_{DS} = 0\text{V}$, $V_{GS} = -10\text{V}$	$f = 1\text{ MHz}$
Source Gate Capacitance	C_{gs}		5		5		5	pF	$V_{DS} = 0\text{V}$, $V_{GS} = -10\text{V}$	$f = 1\text{ MHz}$
Drain Gate + Source Gate Capacitance	$C_{gd} + C_{gs}$		28		28		28	pF	$V_{DS} = V_{GS} = 0\text{V}$	$f = 1\text{ MHz}$

Switching Characteristics

Switching Characteristics		Typ	Typ	Typ						
Turn ON Delay Time	t _{d(on)}	7	7	7	ns		J111	J112	J113	
Rise Time	t _r	6	6	2	ns	V _{DD}	10	10	10	V
Turn OFF Delay Time	t _{d(off)}	20	20	20	ns	V _{GS(OFF)}	− 12	− 7	− 5	V
Fall Time	t _f	15	15	15	ns	R _L	800	1600	3200	Ω

TO-226AA Package

Dimensions in Inches (mm)

Pin Configuration

1 Drain, 2 Source, 3 Gate

Surface Mount

SMPJ111, SMPJ112, SMPJ113

