

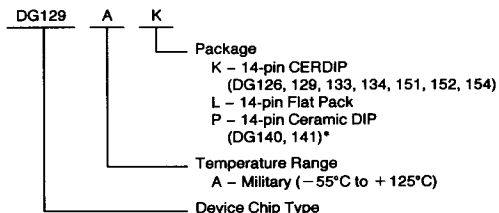
DG126, DG129, DG133, DG134, DG140, DG141, DG151-154

High Reliability DUAL JFET Analog Switch

GENERAL DESCRIPTION

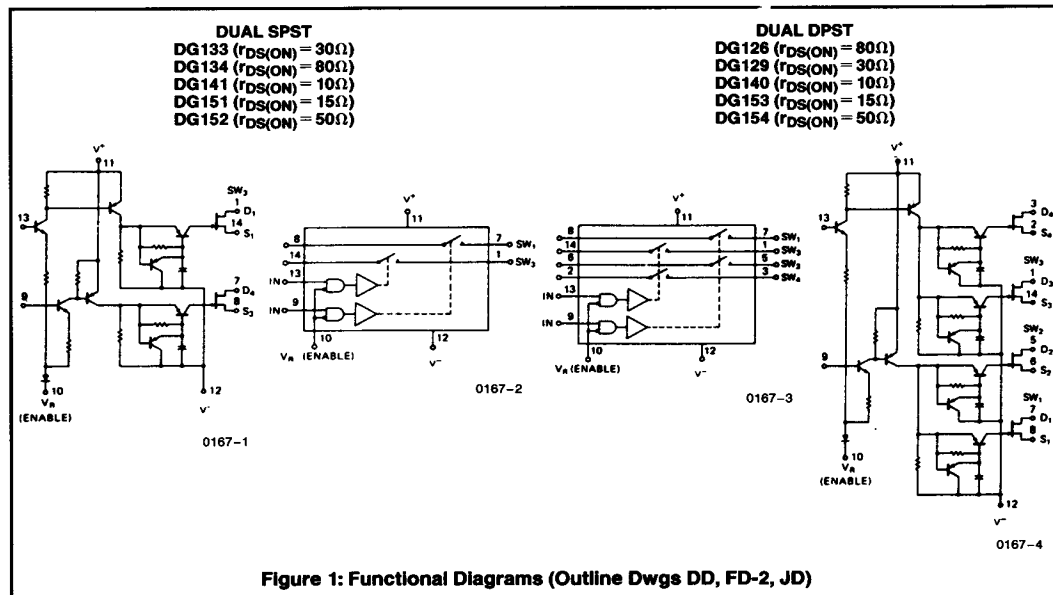
These switching circuits contain two channels in one package, each channel consisting of a driver circuit controlling a SPST or DPST junction FET switch. The driver interfaces DTL, TTL or RTL logic signals for multiplexing, commutating, and D/A converter applications, which permits logic design directly with the switch function. Logic "1" at the input turns the FET switch ON, and logic "0" turns it off.

ORDERING INFORMATION



FEATURES

- Each Channel Complete—Interfaces With Most Integrated Logic
- Low OFF Power Dissipation, 1mW
- Switches Analog Signals Up to 20 Volts Peak-to-Peak
- Low $r_{DS(ON)}$, 10 Ohms Max on DG140/A and DG141/A
- Switching Times Improved 100%—'A' Versions



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ABSOLUTE MAXIMUM RATINGS

Analog Signal Voltage ($V_A - V^-$ or $V^+ - V_A$)	30V
Total Supply Voltage ($V^+ - V^-$)	36V
Positive Supply Voltage to Ref. Voltage ($V^+ - V_R$)	25V
Ref. Voltage to Neg. Supply Voltage ($V_R - V^-$)	22V
Power Dissipation (Note)	750mW
Current (any terminal)	30mA
Storage Temperature	-65°C to +150°C
Operating Temperature	-55°C to +125°C
Lead Temperature (Soldering, 10sec)	300°C

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

NOTE: Dissipation rating assumes device is mounted with all leads welded or soldered to printed circuit board in ambient temperature below 70°C. For higher temperature, derate at rate of 10mW/°C.

ELECTRICAL CHARACTERISTICS (Per Channel)

Applied voltages for all test: DG126, DG129, DG133, DG134, DG140, DG141 ($V^+ = +12V$, $V^- = -18V$, $V_R = 0$), and DG151, DG152, DG153, DG154 ($V^+ = +15V$, $V^- = -15V$, $V_R = 0$). Input test condition which guarantees FET switch ON or OFF as specified is used for output and power supply specifications.

SYMBOL (NOTE)	CHARACTERISTIC	TYPE	TEST CONDITIONS	ABSOLUTE MAX LIMIT			UNIT
				-55°C	25°C	125°C	
INPUT							
V _{IN(ON)}	Input Voltage-On	All Circuits	V ₂ = -12V	2.9 min	2.5 min	2.0 min	Volts
V _{IN(OFF)}	Input Voltage-Off		V ₂ = -12V	1.4	1.0	0.6	Volts
I _{IN(ON)}	Input Current		V _{IN} = 2.5V	120	60	60	μA
I _{IN(OFF)}	Input Leakage Current		V _{IN} = 0.8V	0.1	0.1	2	μA
SWITCH OUTPUT							
r _{DS(ON)}	Drain-Source On Resistance	DG126 DG134	V _{IN} = (See Note) V _D = 10V, I _S = 10mA	80	80	150	Ω
		DG129 DG133		30	30	50	Ω
		DG140 DG141		10	10	20	Ω
		DG151 DG153	V _D = 7.5V, I _S = 10mA	15	15	30	Ω
		DG152 DG154		V _{IN} = (See Note)	50	50	100
I _{D(ON)} + I _{S(ON)}	Drive Leakage Current	DG126	V _D = V _S = -10V		±2	100	nA
I _{S(OFF)}	Source Leakage Current	DG129	V _S = 10V, V _D = -10V		±1	100	nA
I _{D(OFF)}	Drain Leakage Current	DG133 DG134	V _D = 10V, V _S = -10V		±1	100	nA
I _{D(ON)} + I _{S(ON)}	Drive Leakage Current	DG140	V _D = V _S = -10V		±2	100	nA
I _{S(OFF)}	Source Leakage Current	DG141	V _S = 10V, V _D = -10V		±10	1000	nA
I _{D(OFF)}	Drain Leakage Current		V _D = 10V, V _S = -10V		±10	1000	nA
I _{D(ON)} + I _{S(ON)}	Drive Leakage Current	DG151	V _D = V _S = -7.5V		±2	500	nA
I _{S(OFF)}	Source Leakage Current		DG153	V _S = 7.5V, V _D = -7.5V		±10	1000
I _{D(OFF)}	Drain Leakage Current		V _D = 7.5V, V _S = -7.5V		±10	1000	nA
I _{D(ON)} + I _{S(ON)}	Drive Leakage Current	DG152 DG154	V _D = V _S = -7.5V		±2	500	nA
I _{S(OFF)}	Source Leakage Current		V _S = 7.5V, V _D = -7.5V		±2	200	nA
I _{D(OFF)}	Drain Leakage Current		V _D = 7.5V, V _S = -7.5V		±2	200	nA

NOTE: V_{IN} must be a step function with a minimum slew-rate of $1V/\mu s$.

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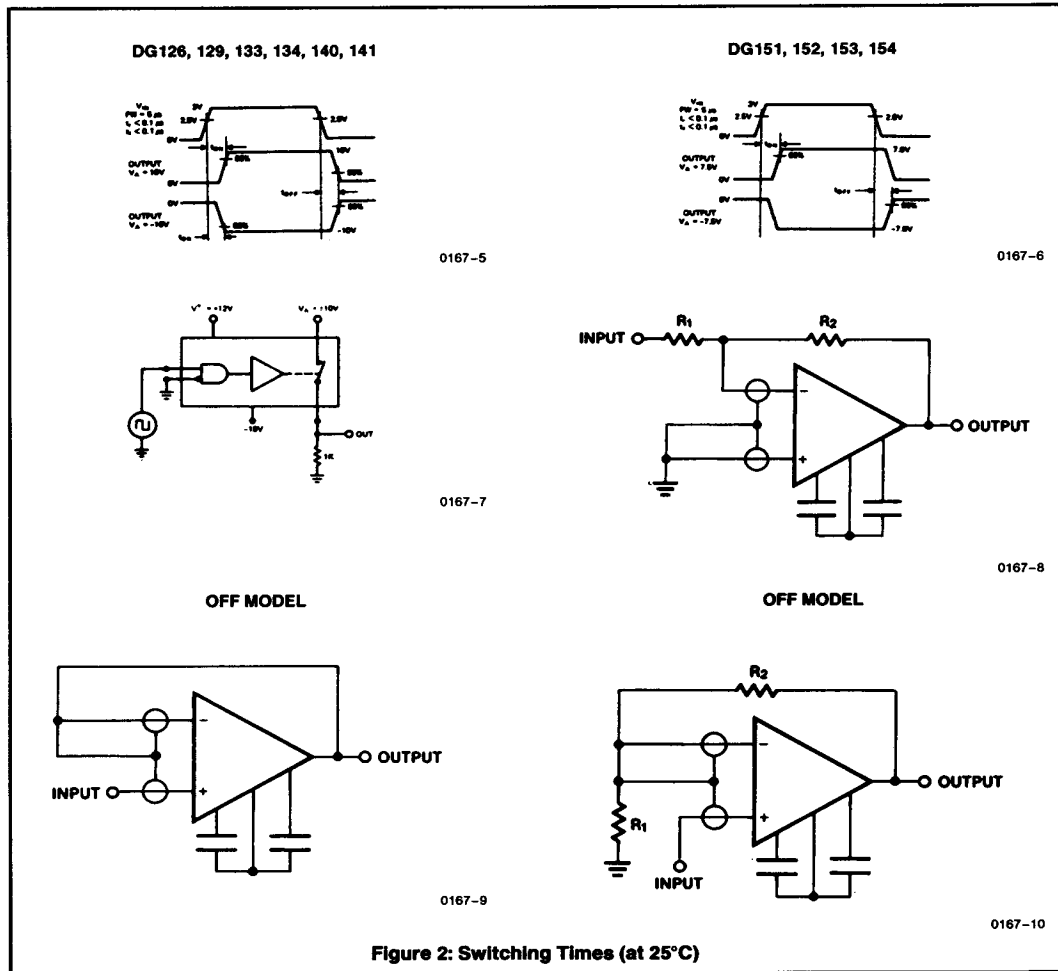
ELECTRICAL CHARACTERISTICS (Per Channel) (Continued)

SYMBOL (NOTE)	CHARACTERISTIC	TYPE	TEST CONDITIONS	ABSOLUTE MAX LIMIT			UNIT
				-55°C	25°C	125°C	
POWER SUPPLY							
I _{1(ON)}	Positive Power Supply Drain Current	All Circuits	One Driver ON, V _{IN} = 2.5V		3		mA
I _{2(ON)}	Negative Power Supply Drain Current				-1.8		mA
I _{R(ON)}	Reference Power Supply				-1.4		mA
I _{1(OFF)}	Drain Current Positive Power Supply Leakage Current		Both Drivers OFF, V _{IN} = 0.8V		25		μA
I _{2(OFF)}	Negative Power Supply Leakage Current				-25		μA
I _{R(OFF)}	Reference Power Supply Leakage Current				-25		μA
SWITCHING							
t _{ON}	Turn-On Time	See Below	DG126, DG129, DG133, DG134, DG152, DG154		600		ns
t _{OFF}	Turn-Off Time	See Below	DG126, DG129, DG133, DG134, DG152, DG154		1.6		μs
t _{ON}	Turn-On Time	See Below	DG140, DG141, DG151, DG153		1.0		μs
t _{OFF}	Turn-On Time	See Below	DG140, DG141, DG151, DG153		2.5		μs
POWER							
P _{ON}	ON Driver Power	All Circuits	Both Inputs V _{IN} = 2.5V		175		mW
P _{OFF}	OFF Driver Power		Both Inputs V _{IN} = 1V		1		mW

NOTE: (OFF) and (ON) subscript notation refers to the conduction state of the FET switch for the given test.

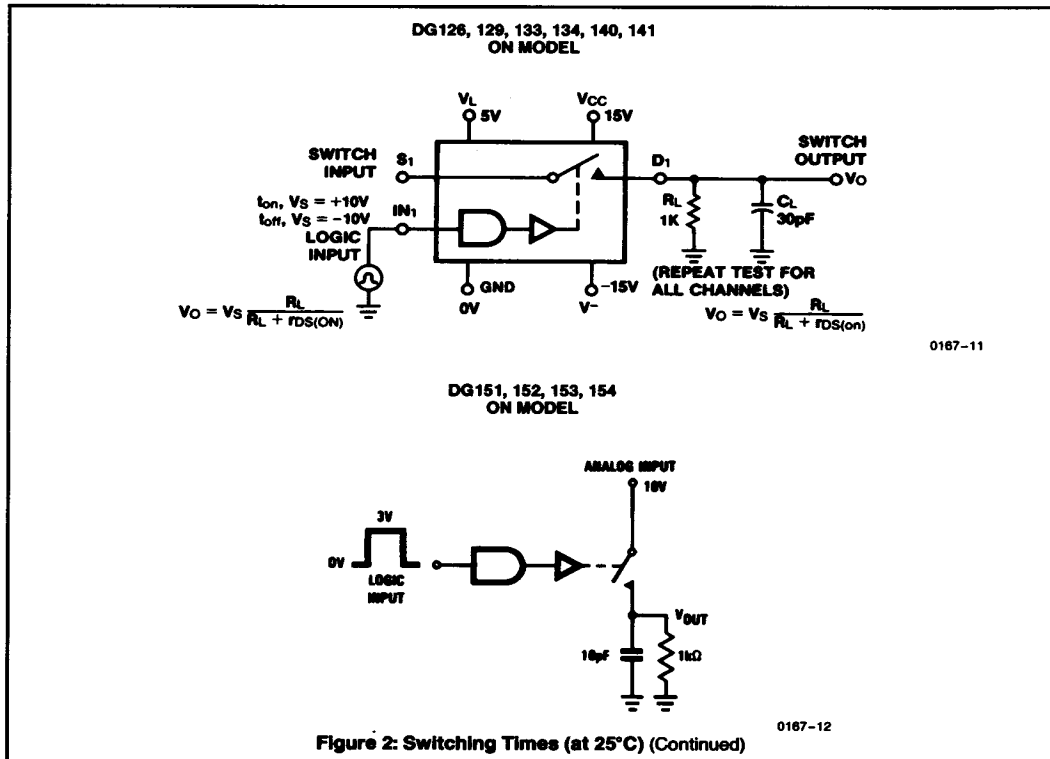
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ELECTRICAL CHARACTERISTICS (Continued)



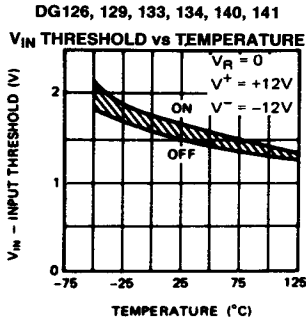
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DG126, DG129, DG133, DG134, DG140, DG141, DG151-154

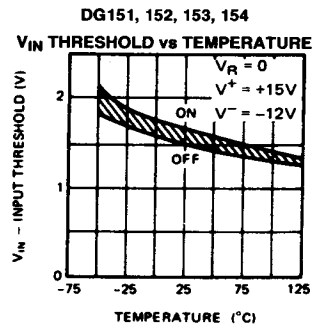


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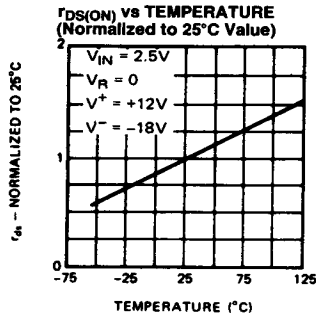
TYPICAL PERFORMANCE CHARACTERISTICS (per channel)



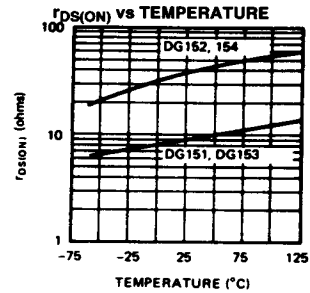
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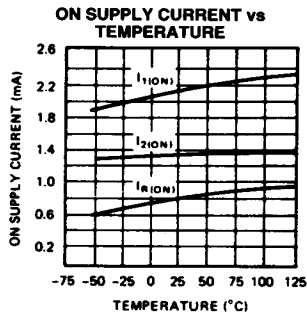


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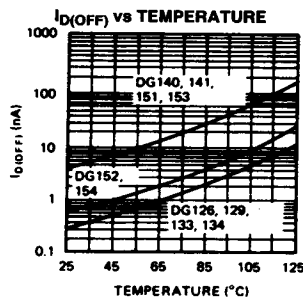


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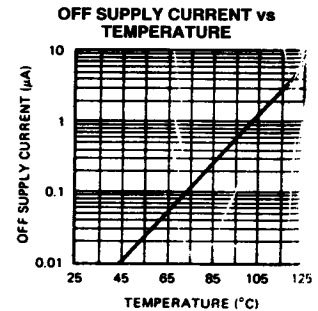
ALL CIRCUITS



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