ORDERING INFORMATION

TEMP. RANGE	PACKAGE	PART NUMBER
-40 °C to 85 °C	miniQFN-10	DG2723DN-T1-E4

TRUTH TABLE

S+ (PIN 8)	S- (PIN 10)	FUNCTION
X	0	D- = HSD1-
X	1	D- = HSD2-
0	X	D+ = HSD1+
1	X	D+ = HSD2+

PIN DESCRIPTIONS

PIN NAME	DESCRIPTION
S+	Select Input for D+
S-	Select Input for D-
HSD±, HSD2±, D±	Data Port

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)

PARAMETER		LIMIT	UNIT
Reference to GND	V+	-0.3 to 6	V
	S+, S-, D±, HSD1±, HSD2± [a]	-0.3 to (V+ + 0.3)	
Current (Any Terminal except S+, S-, D±, HSD1±, HSD2±)		30	mA
Continuous Current (S+, S-, D±, HSD1±, HSD2±)		± 250	
Peak Current (Pulsed at 1 ms, 10 % Duty Cycle)		± 500	
Storage Temperature (D Suffix)		-65 to 150	°C
Power Dissipation (Packages) [b]	miniQFN-10 [c]	208	mW
ESD (Human Body Model)		5	kV
Latch-up (Current Injection)		500	mA

Notes

a. Signals on S+, S-, D±, HSD1±, HSD2± exceeding V+ will be clamped by internal diodes. Limit forward diode current to maximum current ratings.
b. All leads welded or soldered to PC board.
c. Derate 2.6 mW/°C above 70 °C.

SPECIFICATIONS (V+ = 3 V)

PARAMETER	SYMBOL	TEST CONDITIONS OTHERWISE UNLESS SPECIFIED	TEMP.[a]	LIMITS -40 °C to 85 °C			UNIT
				MIN. [b]	TYP. [c]	MAX. [b]	
Analog Switch							
Analog Signal Range [d]	V_{ANALOG}	$R_{DS(on)}$	Full	0	-	V+	V
On-Resistance	$R_{DS(on)}$	V+ = 3 V, $I_{D±}$ = 8 mA, $V_{HSD1/2±}$ = 0.4 V	Room	-	5.5	8	Ω
			Full	-	-	9	
On-Resistance Match [d]	ΔR_{ON}	V+ = 3 V, $I_{D±}$ = 8 mA, $V_{HSD1/2±}$ = 0.4 V	Room	-	0.8	-	
On-Resistance Resistance Flatness [d]	R_{ON} Flatness	V+ = 3 V, $I_{D±}$ = 8 mA, $V_{HSD1/2±}$ = 0 V, 1 V	Room	-	2	-	
Switch Off Leakage Current	$I_{(off)}$	V+ = 4.3 V, $V_{HSD1/2±}$ = 0.3 V, 3 V, $V_{D±}$ = 3 V, 0.3 V	Full	-100	-	100	nA
Channel On Leakage Current	$I_{(on)}$	V+ = 4.3 V, $V_{HSD1/2±}$ = 0.3 V, 4 V, $V_{D±}$ = 4 V, 0.3 V	Full	-200	-	200	
Digital Control							
Input Voltage High	V_{INH}	V+ = 3 V to 3.6 V	Full	1.3	-	-	V
		V+ = 4.3 V	Full	1.5	-	-	
Input Voltage Low	V_{INL}	V+ = 3 V to 4.3 V	Full	-	-	0.5	
Input Capacitance	C_{IN}		Full	-	6.5	-	pF
Input Current	I_{INL} or I_{INH}	V_{IN} = 0 or V+	Full	-1	-	1	µA

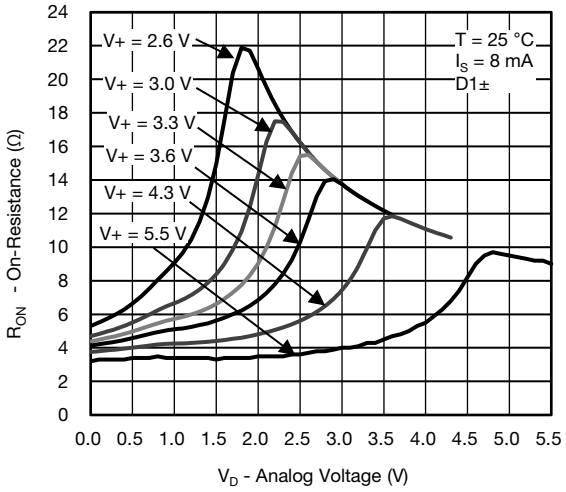
SPECIFICATIONS (V+ = 3 V)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS OTHERWISE UNLESS SPECIFIED**	**TEMP.[a]**	**LIMITS -40 °C to 85 °C**			**UNIT**
				MIN. [b]	**TYP. [c]**	**MAX. [b]**	
Dynamic Characteristics							
Break-Before-Make Time [e, d]	t_{BBM}	V+ = 3 V, $V_{D1/2±}$ = 1.5 V, R_L = 50 Ω, C_L = 35 pF	Room	-	5	-	ns
			Full				
S-, S+ Turn-On Time [e, d]	t_{ON}		Room	-	-	30	
			Full				
S-, S+ Turn-Off Time [e, d]	t_{OFF}		Room	-	-	25	
			Full				
Charge Injection [d]	Q_{INJ}	C_L = 1 nF, R_{GEN} = 0 Ω, V_{GEN} = 0 V	Room	-	3	-	pC
Off-Isolation [d]	OIRR	V+ = 3 V to 3.6 V, R_L = 50 Ω, C_L = 5 pF, f = 240 MHz		-	-29	-	dB
Crosstalk [d]	X_{TALK}			-	-36	-	
Bandwidth [d]	BW	V+ = 3 V to 3.6 V, C_L = 5 pF, R_L = 50 Ω, -3 dB		-	700	-	MHz
Channel-Off Capacitance [d]	$C_{D1± (off)}$	V+ = 3.3 V, f = 1 MHz		-	2.5	-	pF
	$C_{D2± (off)}$			-	2.5	-	
Channel-On Capacitance [d]	$C_{D± (off)}$			-	2.5	-	
	$C_{D± (on)}$			-	6.5	-	
Channel-to-Channel Skew [d]	$t_{SK(O)}$	V+ = 3 V to 3.6 V, R_L = 50 Ω, C_L = 5 pF		-	50	-	ps
Skew Off Opposite Transitions of the Same Output [d]	$t_{SK(p)}$			-	20	-	
Total Jitter [d]	t_J			-	200	-	
Power Supply							
Power Supply Range	V+			2.6	-	5.5	V
Power Supply Current	I+	V_{IN} = 0 V, or V+	Full	-	-	2	µA

Notes

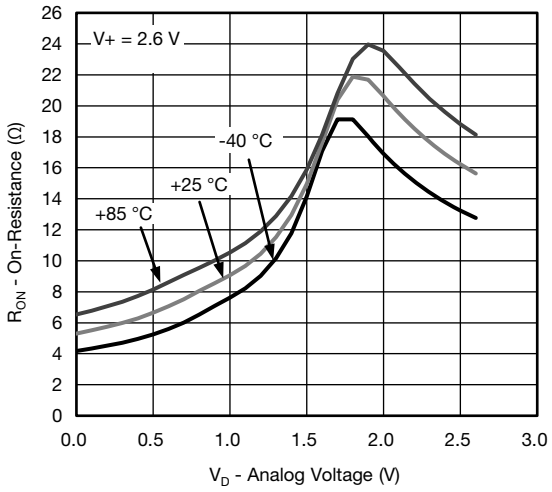
a. Room = 25 °C, Full = as determined by the operating suffix.
b. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum, is used in this datasheet.
c. Typical values are for design aid only, not guaranteed nor subject to production testing.
d. Guarantee by design, not subjected to production test.
e. V_{IN} = input voltage to perform proper function.
f. Crosstalk measured between channels.

Stresses beyond 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 beyond 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.

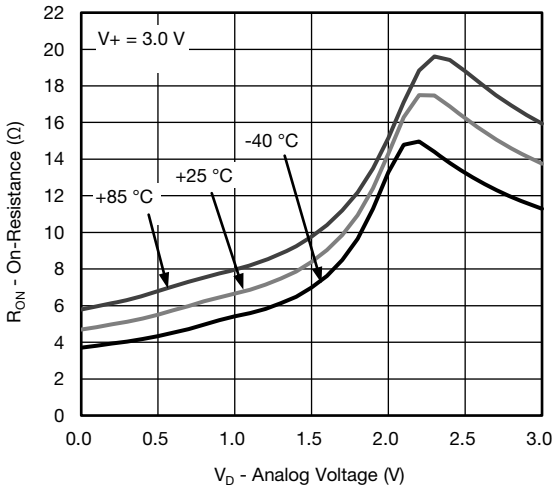
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



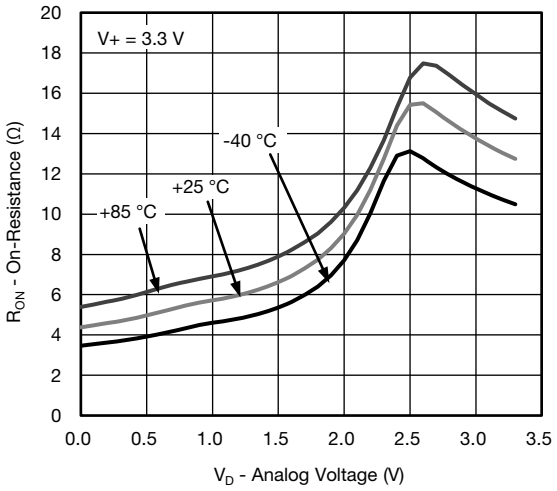
R_{ON} vs. V_D and Single Supply Voltage



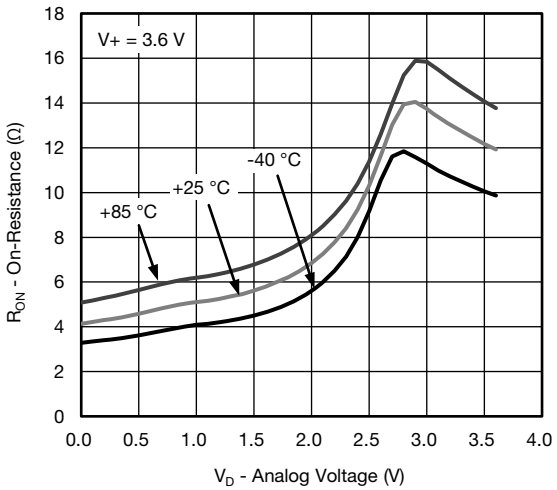
R_{ON} vs. Analog Voltage and Temperature



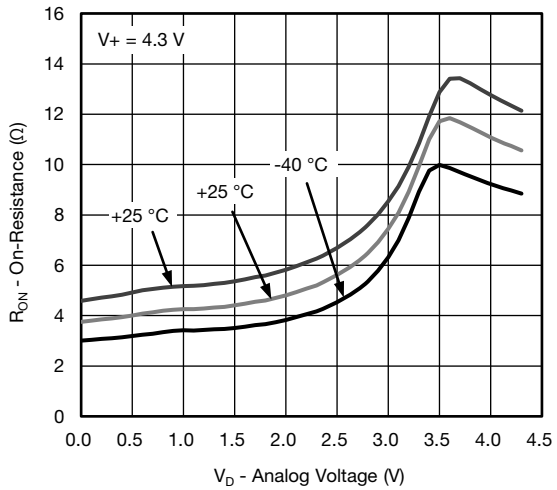
R_{ON} vs. Analog Voltage and Temperature



R_{ON} vs. Analog Voltage and Temperature

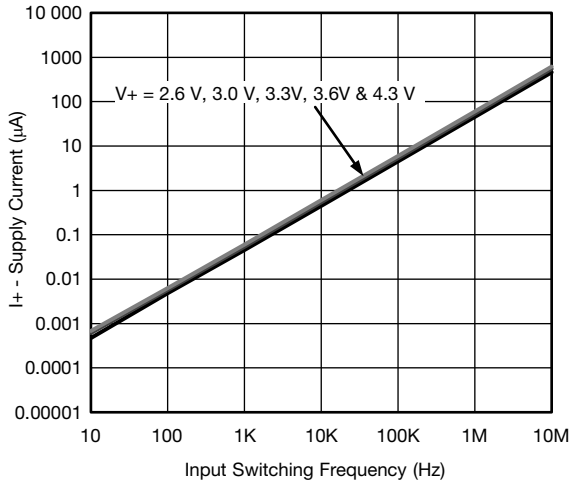


R_{ON} vs. Analog Voltage and Temperature

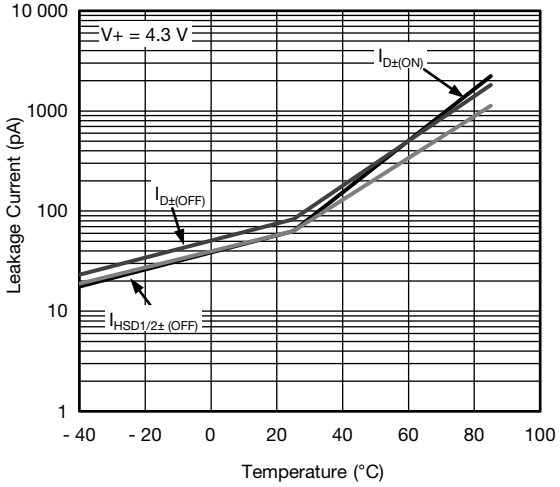


R_{ON} vs. Analog Voltage and Temperature

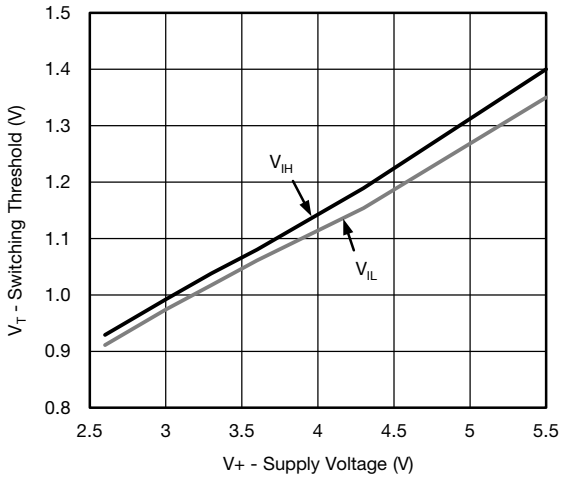
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



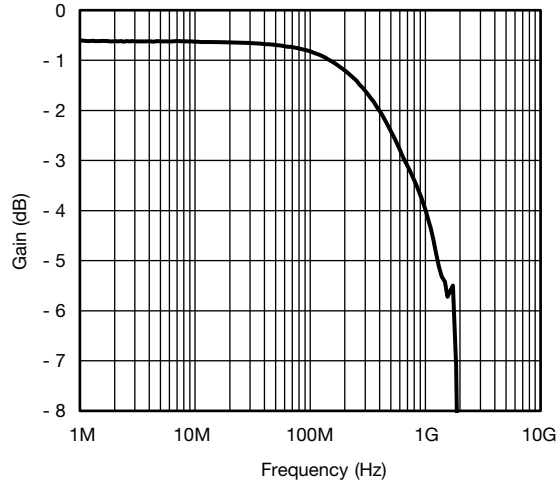
Supply Current vs. Input Switching Frequency



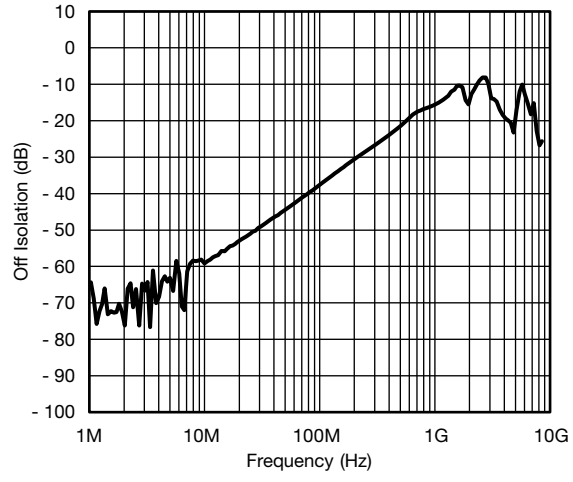
Leakage Current vs. Temperature



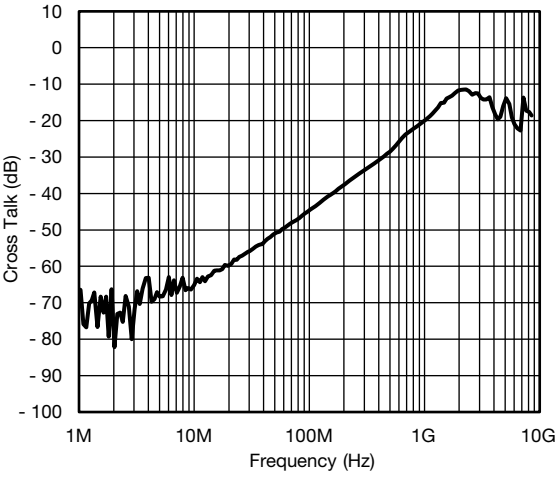
Switching Threshold vs. Supply Voltage



Gain vs. Frequency, V+ = 3.3 V

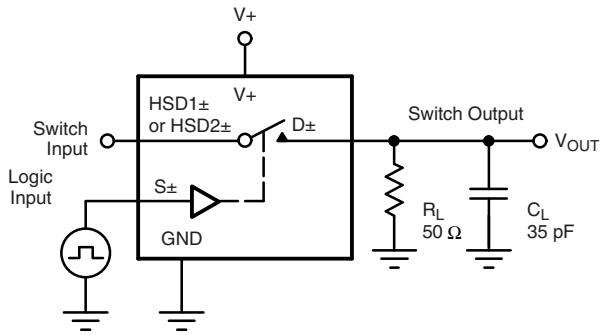


Off-Isolation, V+ = 3.3 V



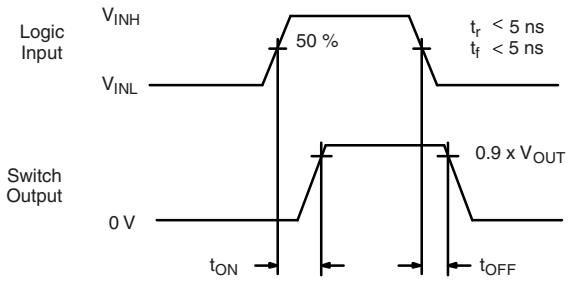
Crosstalk, V+ = 3.3 V

TEST CIRCUITS



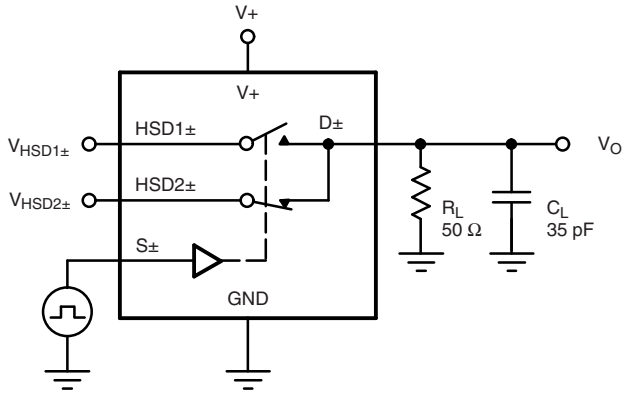
C_L (includes fixture and stray capacitance)

$$V_{OUT} = D\pm \left(\frac{R_L}{R_L + R_{ON}}\right)$$



Logic "1" = Switch on
Logic input waveforms inverted for switches that have the opposite logic sense.

Fig. 1 - Switching Time



C_L (includes fixture and stray capacitance)

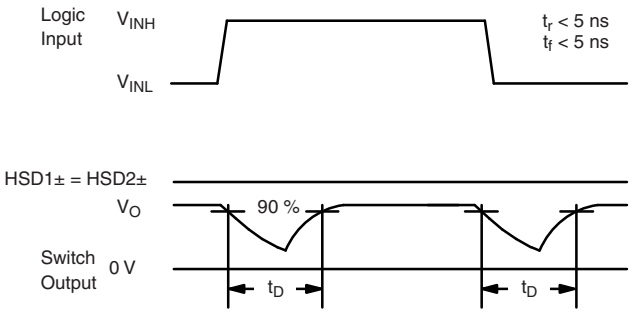
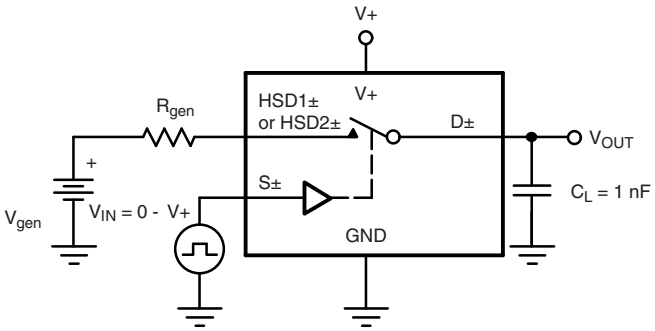
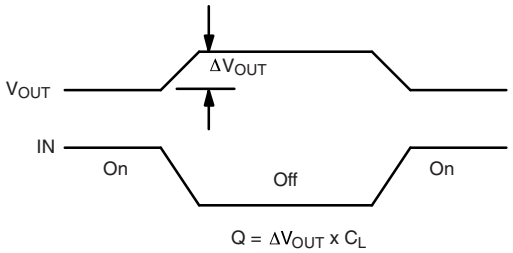


Fig. 2 - Break-Before-Make Interval





$Q = \Delta V_{OUT} \times C_L$

IN depends on switch configuration: input polarity determined by sense of switch.

Fig. 3 - Charge Injection

TEST CIRCUITS

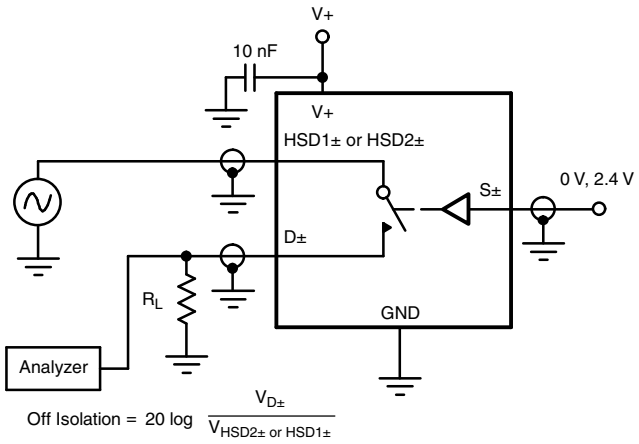


Fig. 4 - Off-Isolation

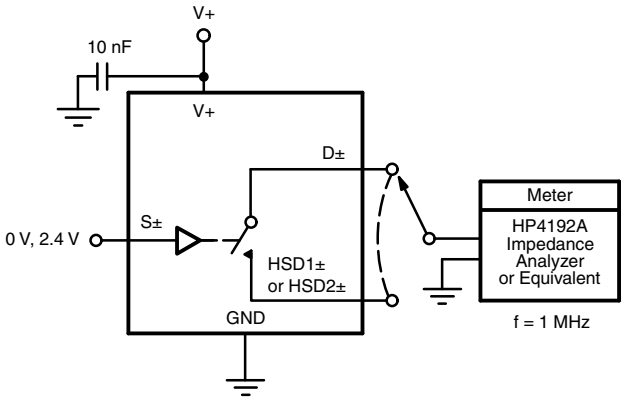


Fig. 5 - Channel Off/On Capacitance

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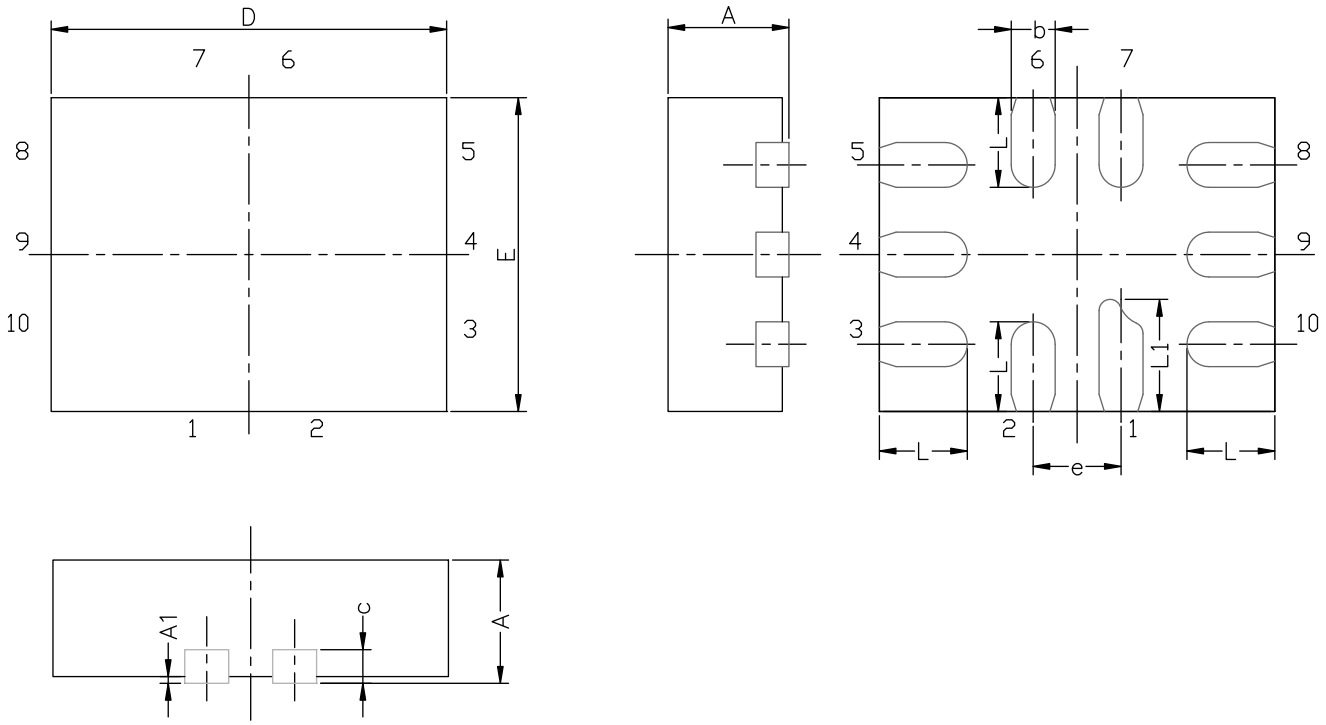
MINI QFN-10L CASE OUTLINE



DIM	MILLIMETERS			INCHES		
	MIN.	NAM.	MAX.	MIN.	NAM.	MAX.
A	0.45	0.55	0.60	0.0177	0.0217	0.0236
A1	0.00	-	0.05	0.000	-	0.002
b	0.15	0.20	0.25	0.006	0.008	0.010
c	0.150 or 0.127 REF (1)			0.006 or 0.005 REF (1)		
D	1.70	1.80	1.90	0.067	0.071	0.075
E	1.30	1.40	1.50	0.051	0.055	0.059
e	0.40 BSC			0.016 BSC		
L	0.35	0.40	0.45	0.014	0.016	0.018
L1	0.45	0.50	0.55	0.0177	0.0197	0.0217

Note

(1) The dimension depends on the leadframe that assembly house used.

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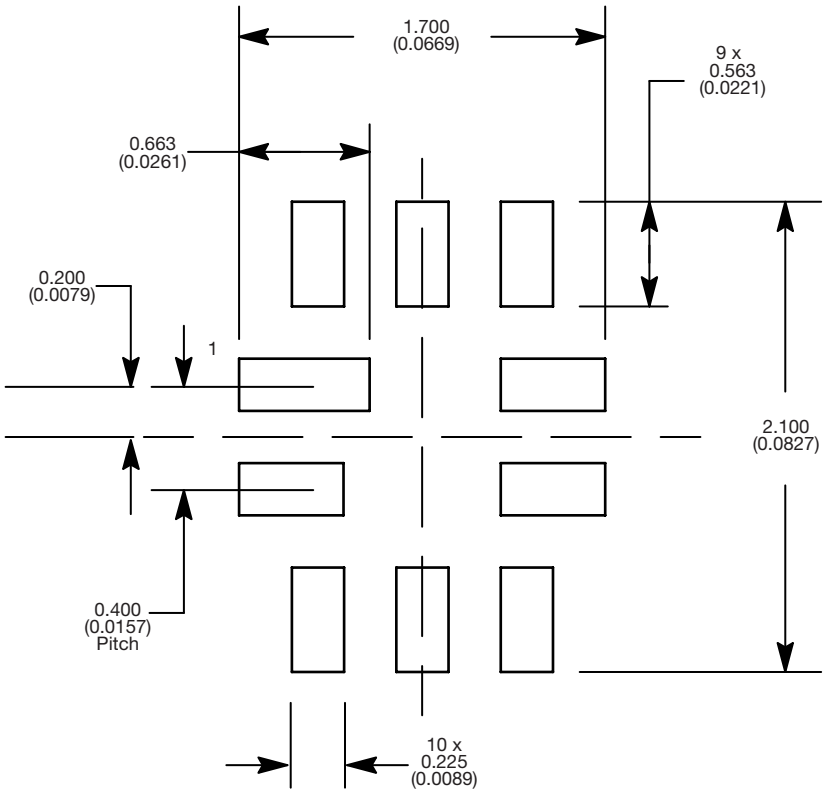
DWG: 5957

RECOMMENDED MINIMUM PADS FOR MINI QFN 10L



Mounting Footprint
Dimensions in mm (inch)

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