

Product Features

- Frequency: 30MHz ~ 8GHz
- Gain: 21.7dB@2GHz
- Output Power for 1dB Compression:
11.0dBm@2GHz
- Noise Figure: 3.9dB@2GHz
- Output Third-Order Interception:
24.4dBm@2GHz
- Supply Current: 38mA@ Vdd=+5V
- Package: DFN6

Application

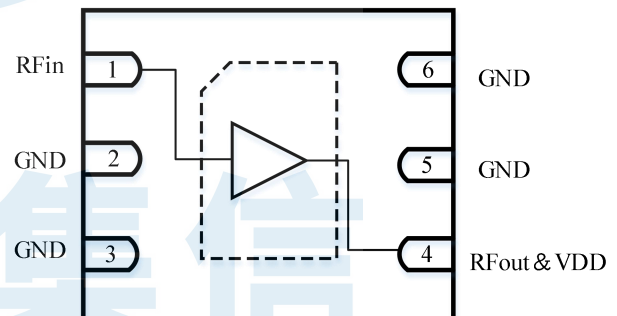
- ISM
- Low power
- Cellular
- Broadband Gain Module

Ordering Information

Part Number	Package	Description
BR9035DC	DFN6	30MHz ~ 8GHz Gain Block Amplifier

General Description

BR9035DC is an MMIC broadband gain amplifier manufactured using GaAs process. Covering a frequency range of 30MHz to 8GHz, the amplifier is internally matched to 50 ohms, and only requires an external RF choke and blocking/bypass capacitors. The product has the advantage of high reliability, low-power consumption and small package, which can meet the general-purpose RF and microwave amplifier requirements.

Functional Block Diagram


Electrical Specifications

Parameters	Test Conditions	Min.	Typ.	Max.	Units
Gain	1GHz	-	22.7	-	dB
	4GHz	-	19.4	-	dB
	8GHz	-	15.0	-	dB
Output Power for 1dB Compression	1GHz	-	13.1	-	dBm
	4GHz	-	10.6	-	dBm
	8GHz	-	10.3	-	dBm
Output Third-Order Interception	1GHz	-	24.3	-	dBm
	4GHz	-	24.6	-	dBm
	8GHz	-	-	-	dBm
Noise Figure	1GHz	-	3.89	-	dB
	4GHz	-	3.93	-	dB
	8GHz	-	3.05	-	dB
Input Return Loss	1GHz	-	-14.1	-	dB
	4GHz	-	-14.5	-	dB
Output Return Loss	1GHz	-	-13.5	-	dB
	4GHz	-	-17.7	-	dB
Supply Voltage	-	-	5	-	V
Supply Current	-	-	38	-	mA

Test Conditions: VDD=+5V, I=38mA; OIP3 spacing=1MHz, Pout=0dBm/tone; TA=+25°C

Absolute Maximum Ratings

Maximum Supply Voltage (Vdd): +5.5V

Maximum RF input Power: 17dBm

Recommended Operating Conditions

Supply Voltage: +5V

Supply Current: 38mA

Operating Temperature: -55°C ~ +125°C

Storage Temperature: -65°C ~ +150°C

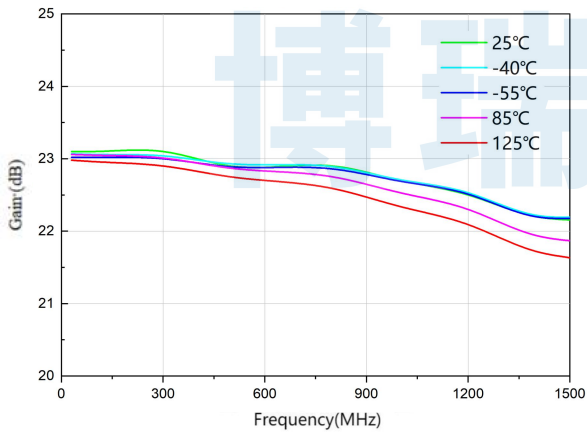
Note: Operation of the device outside the parameter ranges given absolute-maximum-ratings conditions may cause permanent damage, and. exposure to absolute-maximum-ratings conditions for extended periods will affect the reliability.

ESD WARNING**ELECTROSTATIC SENSITIVE DEVICE****OBSERVE HANDLING PRECAUTIONS****博瑞集信**

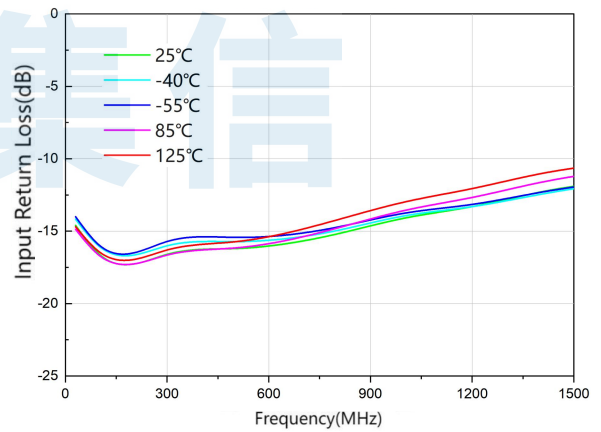
Typical Performance (EVB test results at +5V Supply Voltage for 0.03GHz~1.5GHz)

Parameters	Typ.								Units
	30	100	300	500	800	1000	1200	1400	
Frequency	30	100	300	500	800	1000	1200	1400	MHz
Gain	23.1	23.1	23.1	22.9	22.9	22.7	22.5	22.2	dB
Input Return Loss	-14.6	-16.6	-16.6	-16.2	-15.2	-14.1	-13.3	-12.3	dB
Output Return Loss	-13.6	-15.8	-15.6	-15.3	-14.6	-13.5	-13.0	-12.3	dB
Reverse Isolation	-25.1	-25.1	-25.2	-24.9	-24.9	-24.9	-25.1	-25.1	dB
Output Power for 1dB Compression	14.1	14.8	13.5	12.4	13.4	13.1	12.6	12.0	dBm
Noise Figure	3.66	3.84	3.81	3.80	3.80	3.89	3.84	3.85	dB
Output Third-Order Interception	24.9	25.5	26.1	27.4	24.8	24.3	25.7	25.3	dBm

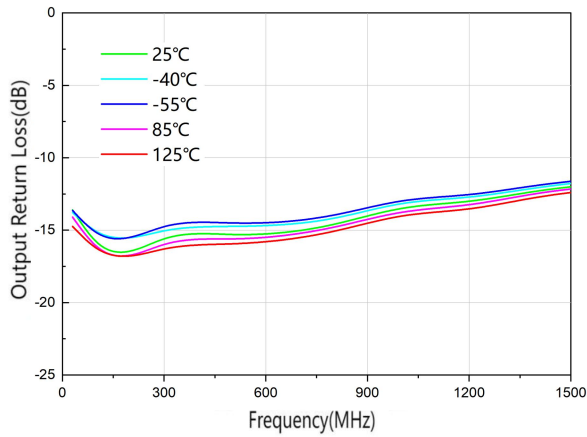
Test Conditions: VDD=+5V, I=38mA; OIP3 spacing=1MHz, Pout=0dBm/tone; TA=+25°C



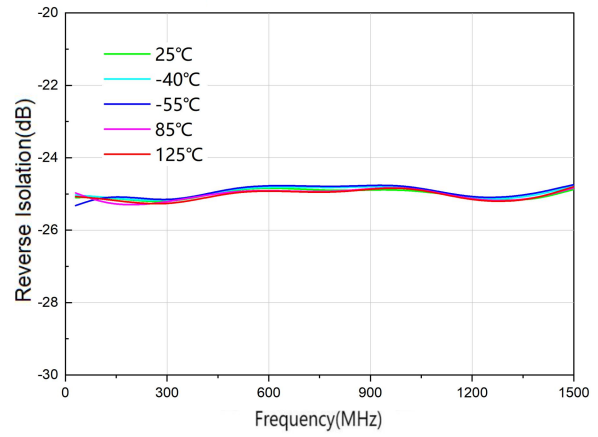
Gain



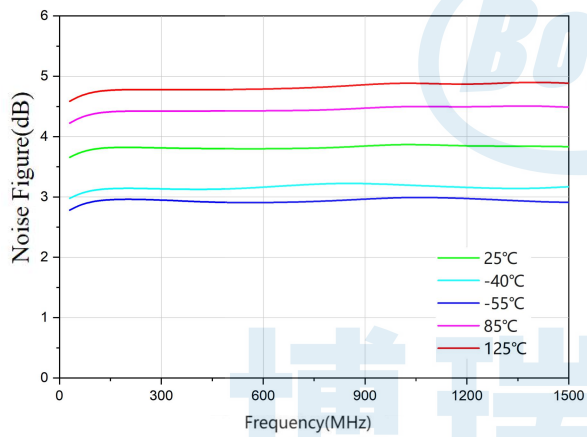
Input Return Loss



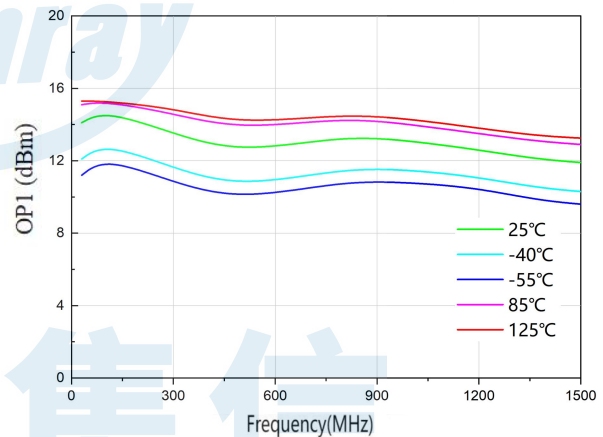
Output Return Loss



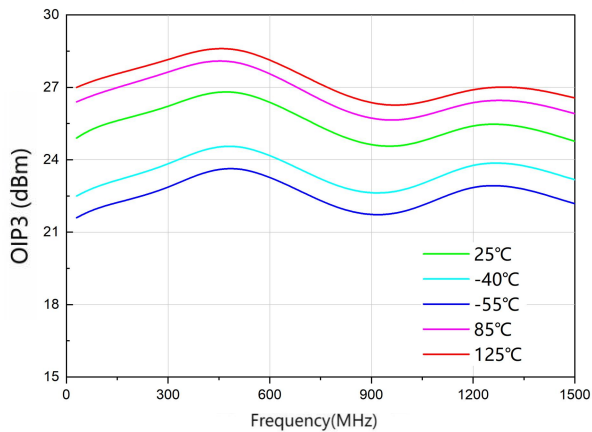
Reverse Isolation



Noise Figure



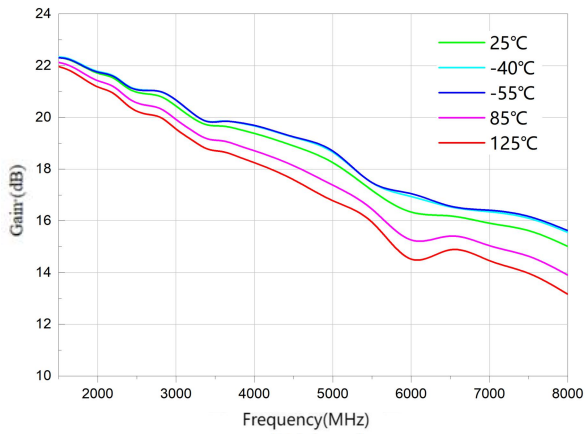
Output Power for 1dB Compression



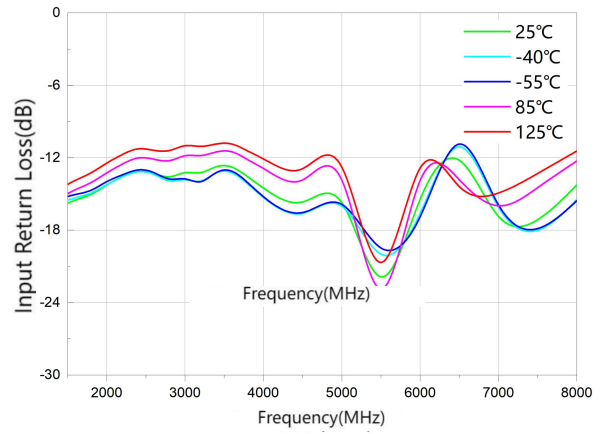
Output Third-Order Interception

(EVB test results at +5V Supply Voltage for 1.5GHz~8GHz)

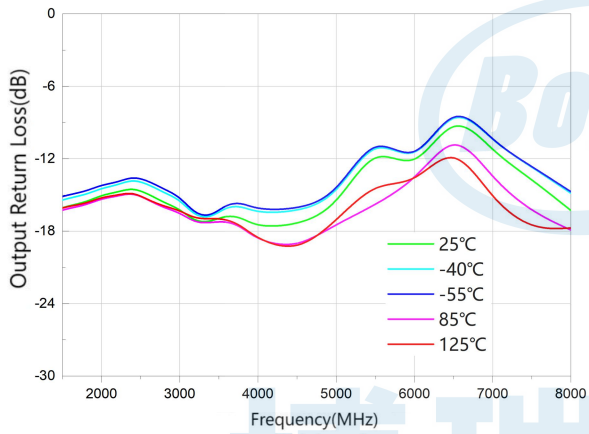
Parameters	Typ.										Units
	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	
Frequency	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	MHz
Gain	22.3	22.0	21.7	21.5	21.1	20.9	20.8	20.4	20.0	19.7	dB
Input Return Loss	-15.5	-15.0	-14.3	-13.6	-13.2	-13.3	-13.6	-13.2	-13.2	-12.7	dB
Output Return Loss	-15.9	-15.6	-15.0	-14.8	-14.4	-14.9	-15.6	-16.2	-17.2	-17.2	dB
Reverse Isolation	-24.4	-24.5	-24.5	-24.6	-24.8	-24.6	-24.1	-24.2	-24.7	-24.1	dB
Output Power for 1dB Compression	12.4	11.8	11.0	11.3	11.0	10.6	11.0	11.4	11.6	11.9	dBm
Noise Figure	3.78	3.86	3.93	3.92	4.08	3.89	4.08	4.13	4.00	4.15	dB
Output Third-Order Interception	25.1	25.5	24.4	23.9	24.8	25.8	23.5	23.9	24.6	24.2	dBm
Frequency	3800	4000	4500	5000	5500	6000	6500	7000	7500	8000	MHz
Gain	19.5	19.4	18.9	18.3	17.2	16.3	16.2	15.9	15.6	15.0	dB
Input Return Loss	-13.6	-14.5	-15.7	-15.7	-21.9	-15.4	-12.2	-16.9	-17.1	-14.2	dB
Output Return Loss	-16.9	-17.7	-17.5	-16.1	-10.5	-13.5	-7.8	-11.4	-13.7	-16.3	dB
Reverse Isolation	-23.3	-23.0	-22.6	-22.3	-22.6	-22.1	-22.3	-21.0	-20.3	-19.6	dB
Output Power for 1dB Compression	11.0	10.6	11.5	11.3	12.2	11.5	12.1	11.7	11.6	10.3	dBm
Noise Figure	4.06	3.93	3.74	3.60	3.38	3.23	3.15	3.29	3.16	3.05	dB
Output Third-Order Interception	23.5	24.6	24.0	22.0	23.5	22.7	-	-	-	-	dBm
Test Conditions: VDD=+5V, I=38mA; OIP3 spacing=1MHz, Pout=0dBm/tone; TA=+25°C											



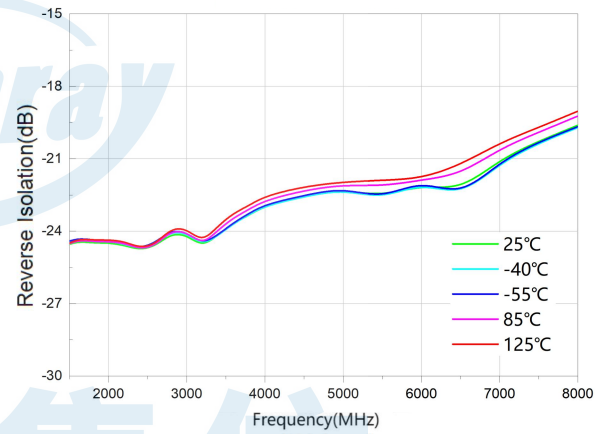
Gain



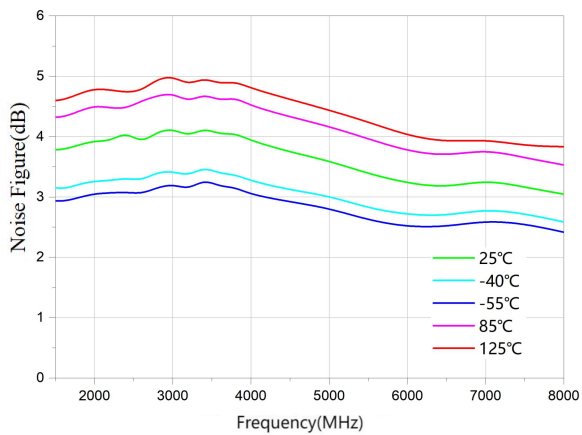
Input Return Loss



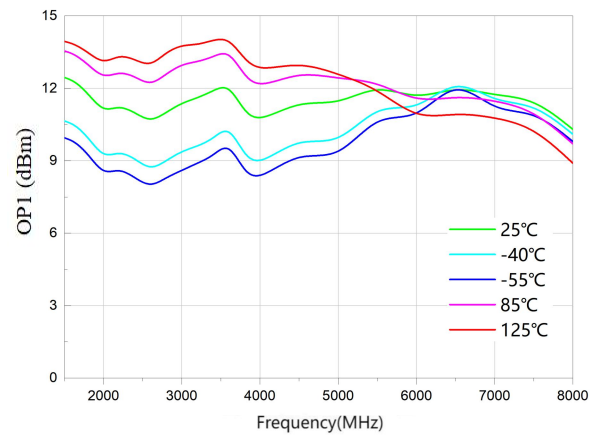
Output Return Loss



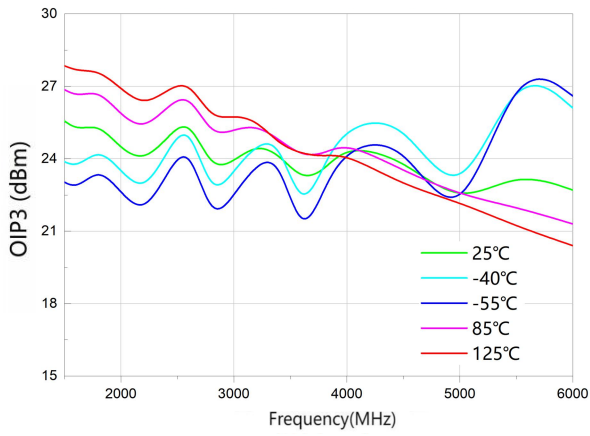
Reverse Isolation



Noise Figure



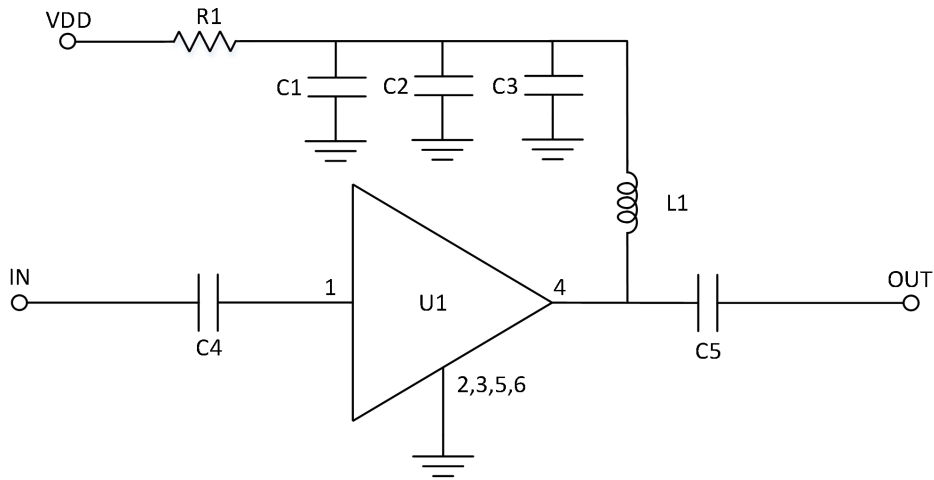
Output Power for 1dB Compression



Output Third-Order Interception



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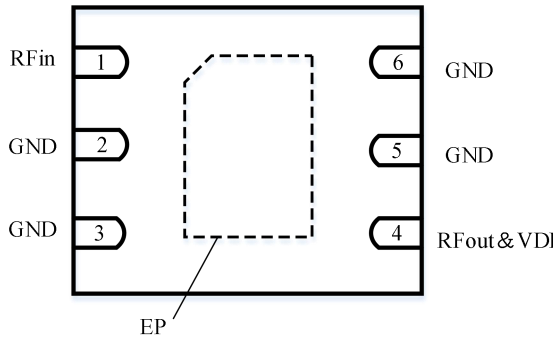
Typical Application Schematic

Bill of Material (0.03GHz~1.5GHz)

Designator	Package	Description	Part Number
C1	0603	1uF	GCM188R71C105KA64D
C3	0402	68pF	GRM1555C1H680JA01D
C2, C4, C5	0402	1000pF	GRM155R71C102KA88
L1	1008	1.1uH	1008AF-112XJRB
R1	0402	30 Ω	RC0402JR-0730RL

Bill of Material (1.5GHz~8GHz)

Designator	Package	Description	Part Number
C1	0603	1uF	GCM188R71C105KA64D
C3	0402	68pF	GRM1555C1H680JA01D
C2, C4, C5	0402	1000pF	GRM155R71C102KA88
L1	0805	18nH	0805HT-18NTJRB
R1	0402	30 Ω	RC0402JR-0730RL

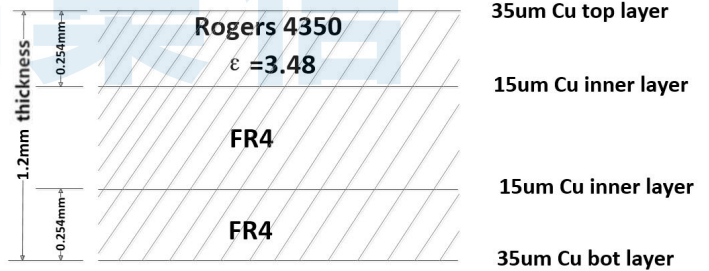
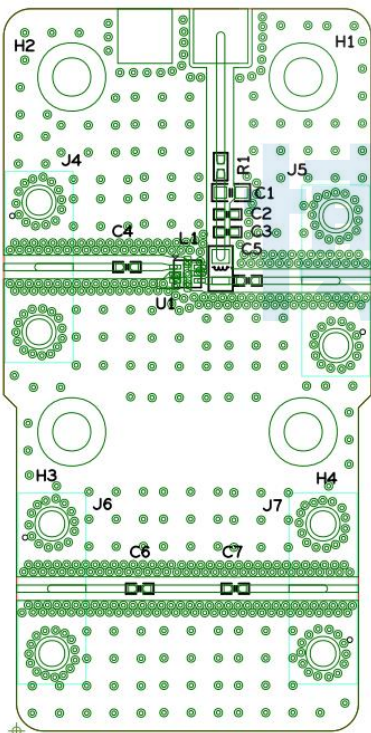
Pin Configuration and Description



Pin Number	Pin Name	Description
1	RFin	RF input pin. A DC Block is required.
2,3,5,6	GND	RF/DC Ground pin. Connect to RF/DC ground
4	RFout & VDD	RF Output pin. DC bias will also need to be injected through a RF bias choke/inductor for operation.
-	EP	RF/DC ground. Use recommended via pattern to minimize inductance and thermal resistant; see PCB Mounting Pattern for suggested footprint.

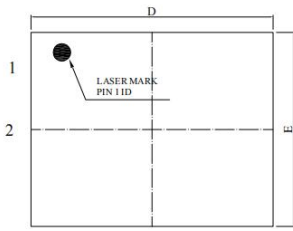


PCB Evaluation Board

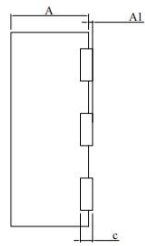


50 ohms Impedance Signal Lines: width=0.53mm,spacing=0.53mm

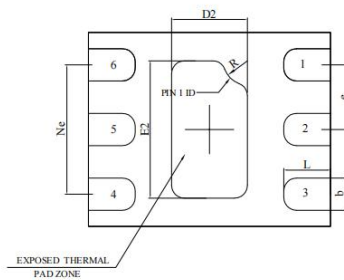
Package Dimensions (mm)



TOP VIEW

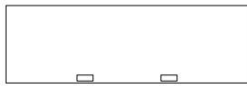


SIDE VIEW



BOTTOM VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	--	0.02	0.05
b	0.15	0.20	0.25
c	0.203REF		
D	1.40	1.50	1.60
D2	0.37	0.47	0.57
e	0.40BSC		
Ne	0.80BSC		
E	1.10	1.20	1.30
E2	0.75	0.85	0.95
L	0.24	0.29	0.34
R	0.15REF.		



SIDE VIEW



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