

APPLICATION NOTE of using PCB based on 0.2 mm line and space rule

This application note shows an example using PCB based on 0.2 mm line and space rule. Our recommendation PCB adopts 0.1 mm line and space rule in order to achieve its extremely high isolation specified in the datasheet. You can get almost same performance as 0.1 mm rule PCB, except isolation degradation. The electrical characteristics examples are shown as follows:

■ ELECTRICAL CHARACTERISTICS1 (DC CHARACTERISTICS)

(General conditions: $T_a=+25^{\circ}\text{C}$, $Z_s=Z_l=50\Omega$, $V_{DD}=2.7\text{V}$, $V_{CTL(L)}=0\text{V}$, $V_{CTL(H)}=1.8\text{V}$, with application circuit)

PARAMETERS	SYMBOL	CONDITIONS	MEASUREMENT DATA	UNITS
Supply Voltage	V_{DD}	VDD terminal	2.7	V
Operating Current	I_{DD}		13.8	μA
Control Voltage (LOW)	$V_{CTL(L)}$	VCTL terminal	0	V
Control Voltage (HIGH)	$V_{CTL(H)}$	VCTL terminal	1.8	V
Control Current	I_{CTL}	$V_{CTL(H)}=1.8\text{V}$	5	μA

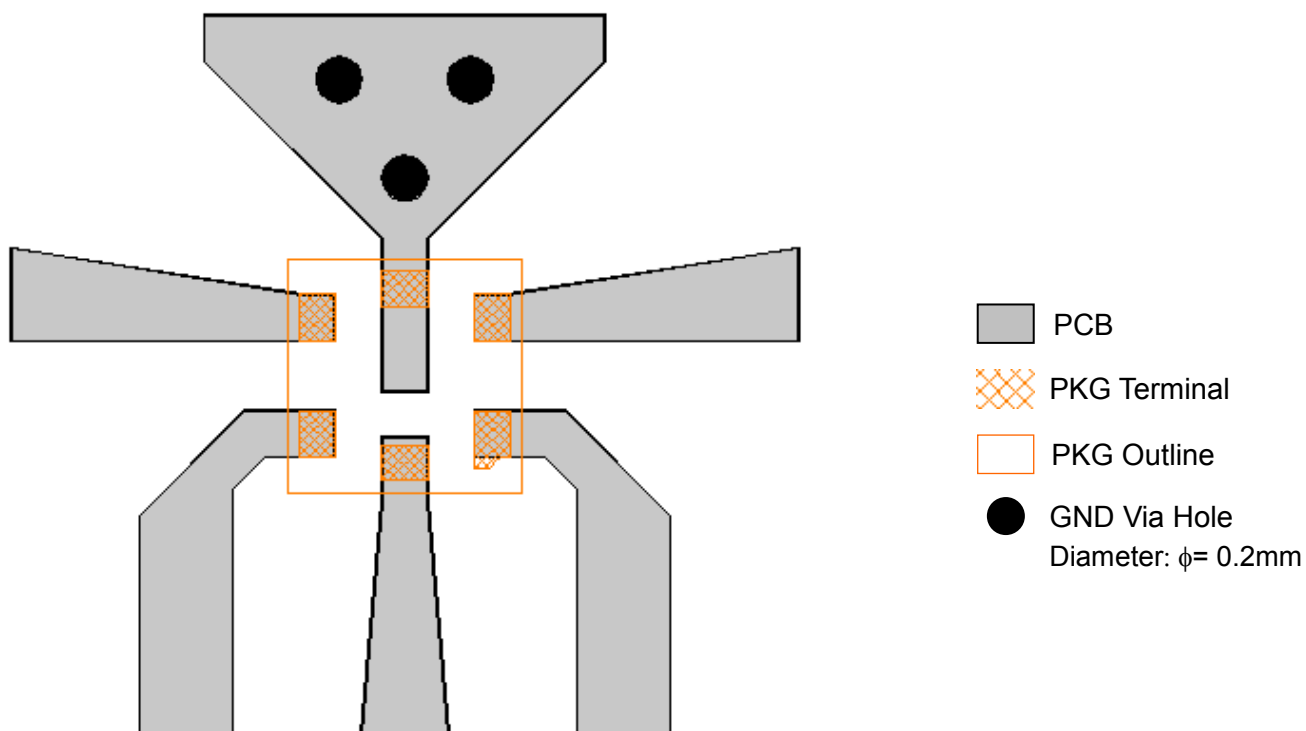
■ ELECTRICAL CHARACTERISTICS2 (RF CHARACTERISTICS)

(General conditions: $T_a=+25^{\circ}\text{C}$, $Z_s=Z_l=50\Omega$, $V_{DD}=2.7\text{V}$, $V_{CTL(L)}=0\text{V}$, $V_{CTL(H)}=1.8\text{V}$, with application circuit)

PARAMETERS	SYMBOL	CONDITIONS	MEASUREMENT DATA	UNITS
Insertion Loss 1	LOSS1	$f=0.5\text{GHz}$, $P_{IN}=0\text{dBm}$	0.52	dB
Insertion Loss 2	LOSS2	$f=1.0\text{GHz}$, $P_{IN}=0\text{dBm}$	0.48	dB
Insertion Loss 3	LOSS3	$f=2.0\text{GHz}$, $P_{IN}=0\text{dBm}$	0.51	dB
Insertion Loss 4	LOSS4	$f=2.7\text{GHz}$, $P_{IN}=0\text{dBm}$	0.52	dB
Isolation 1	ISL1	PC-P1, P2 $f=0.5\text{GHz}$, $P_{IN}=0\text{dBm}$	56.0	dB
Isolation 2	ISL2	PC-P1, P2 $f=1.0\text{GHz}$, $P_{IN}=0\text{dBm}$	50.5	dB
Isolation 3	ISL3	PC-P1, P2 $f=2.0\text{GHz}$, $P_{IN}=0\text{dBm}$	45.2	dB
Isolation 4	ISL4	PC-P1, P2 $f=2.7\text{GHz}$, $P_{IN}=0\text{dBm}$	41.4	dB
Input power at 0.2dB Compression Point	$P_{-0.2\text{dB}}$	$f=2.0\text{GHz}$	22.2	dBm
VSWR	VSWR	$f=2.0\text{GHz}$, On port	1.22	-
Switching time	T_{SW}	50% V_{CTL} to 10/90% RF	2	μs

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<PCB LAYOUT GUIDELINE>



If such high isolation is unnecessary, it is not needed that the ground plane located beneath the device (shown above). In this case, the minimum line and space width of PCB is 0.2mm, and the isolation at 2GHz is about 45dB.