

## 12 GHz Super Low Noise FET in Hollow Plastic PKG

## DESCRIPTION

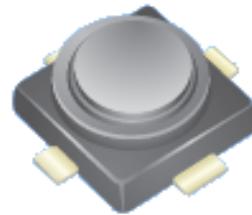
- Super Low Noise and High Gain
- Hollow (Air Cavity) Plastic package

## FEATURES

- Super Low noise figure and high associated gain:  
NF = 0.30 dB TYP., Ga = 13.7 dB TYP.  
@ $V_{DS}$  = 2 V,  $I_D$  = 10 mA, f = 12 GHz

## PACKAGE

- Micro-X plastic package



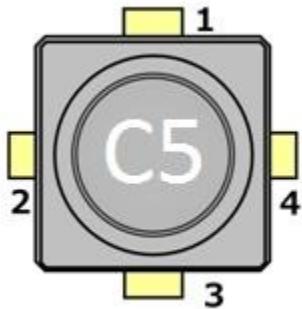
## APPLICATIONS

- DBS LNB gain-stage, Mix-stage
- Low noise amplifier for microwave communication systems

## ORDERING INFORMATION

Part Number	Order Number	Package	Marking	Description
CE3512K2	CE3512K2-C1	Micro-X plastic package	C5	<ul style="list-style-type: none"><li>• Embossed tape 8 mm wide</li><li>• Pin 4 (Gate) faces the perforation side of the tape</li><li>• MOQ 10 kpcs/reel</li></ul>

## PIN CONFIGURATION AND INTERNAL BLOCK DIAGRAM



Pin No.	Pin Name
1	Source
2	Drain
3	Source
4	Gate

## ABSOLUTE MAXIMUM RATINGS

(TA = +25°C, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	$V_{DS}$	4.0	V
Gate to Source Voltage	$V_{GS}$	-3.0	V
Drain Current	$I_D$	$I_{DSS}$	mA
Gate Current	$I_G$	80	$\mu$ A
Total Power Dissipation	$P_{tot}$	125	mW
Channel Temperature	$T_{ch}$	+150	°C
Storage Temperature	$T_{stg}$	-55 to +125	°C
Operation Temperature	$T_{op}$	-55 to +125 <sup>Note</sup>	°C

**Note** Refer to Total Power Dissipation vs. Ambient Temperature graph on page 4

## RECOMMENDED OPERATING RANGE

(TA = +25°C, unless otherwise specified)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Drain to Source Voltage	$V_{DS}$	+1	+2	+3	V
Drain Current	$I_D$	5	10	15	mA

## ELECTRICAL CHARACTERISTICS

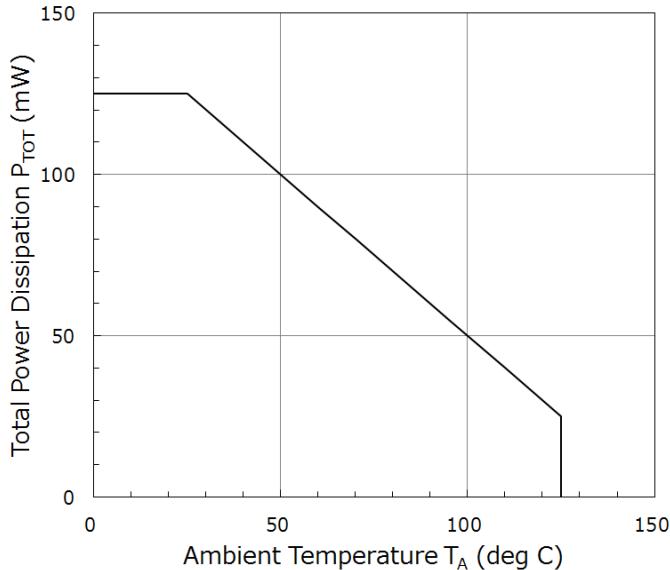
(TA = +25°C, unless otherwise specified)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Gate to Source Leak Current	$I_{GSO}$	$V_{GS} = -3.0V$	-	0.4	10	$\mu A$
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 2V, V_{GS} = 0V$	27	47.5	68	mA
Gate to Source Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = 2V, I_D = 120\mu A$	-1.10	-0.75	-0.39	V
Transconductance	$G_m$	$V_{DS} = 2V, I_D = 10mA$	54	69	-	$mS$
Noise Figure	NF	$V_{DS} = 2V, I_D = 10mA,$ $f = 12GHz$	-	0.30	0.50	$dB$
Associated Gain	$G_a$		12.5	13.7	-	$dB$

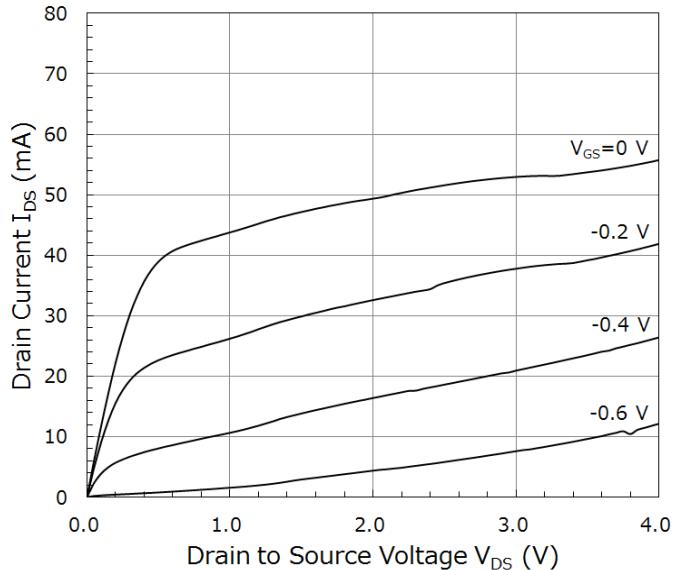
## TYPICAL CHARACTERISTICS :

(TA=+25°C, unless otherwise specified)

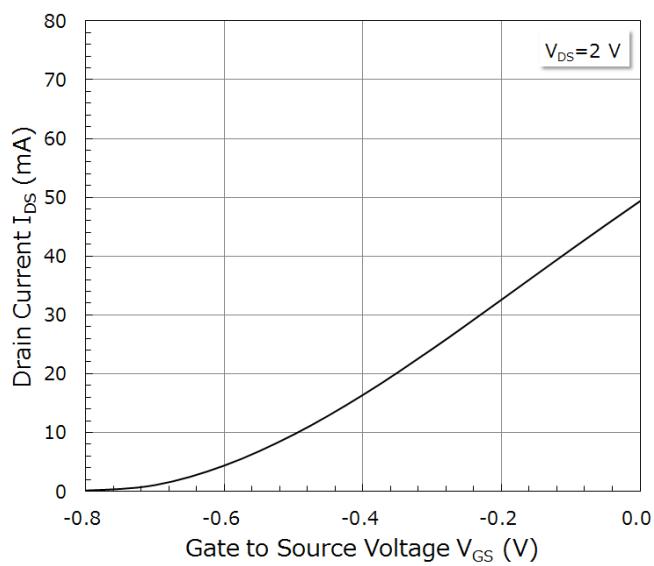
**TOTAL POWER DISSIPATION  
VS. AMBIENT TEMPERATURE**



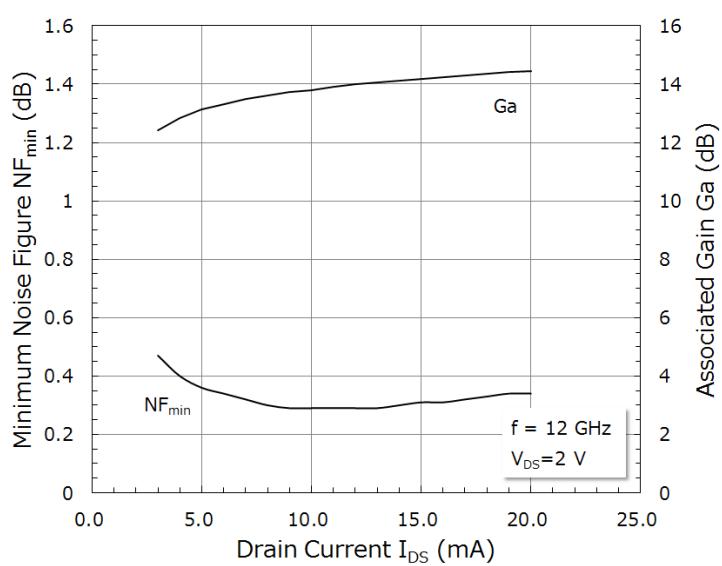
**DRAIN CURRENT VS.  
DRAIN TO SOURCE VOLTAGE**



**DRAIN CURRENT VS.  
GATE TO SOURCE VOLTAGE**



**MINIMUM NOISE FIGURE &  
ASSOCIATED GAIN VS. DRAIN CURRENT**



## S-PARAMETERS

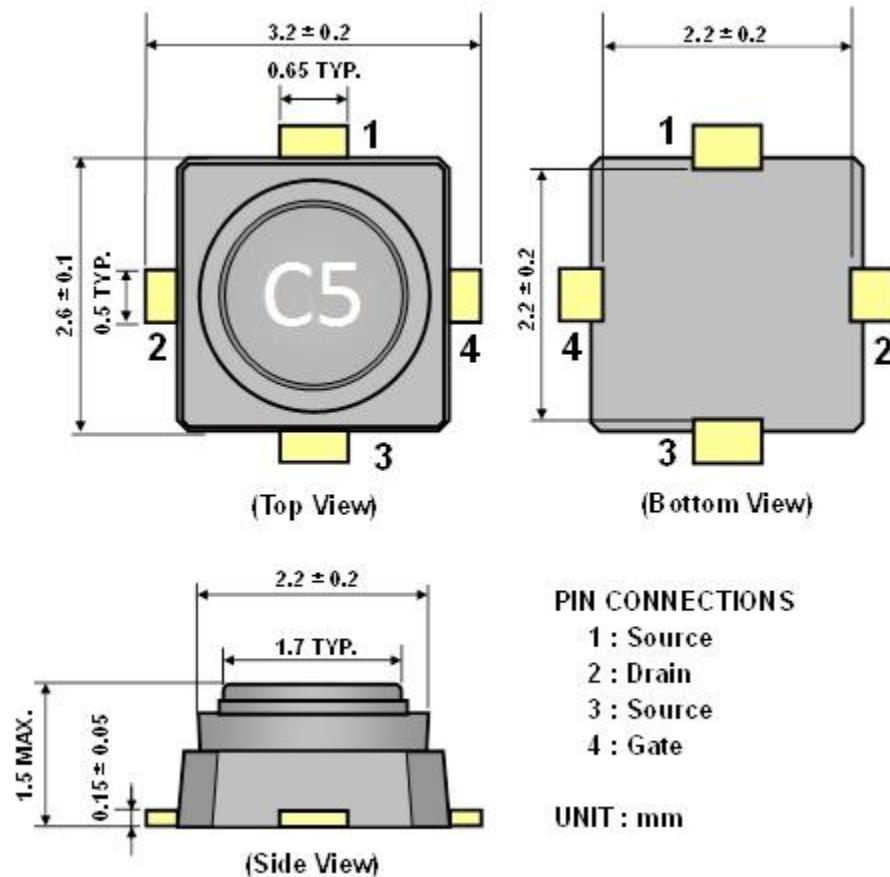
S-Parameters are available on CEL's [Part Summary page](#) under S-parameters

## RECOMMENDED SOLDERING CONDITIONS

Recommended Soldering Conditions are available on CEL's [Part Summary page](#) under Associated Documents

## PACKAGE DIMENSIONS

Micro-X plastic package



## REVISION HISTORY

Version	Change to current version	Page(s)
CDS-0018-04 (Issue A) February 12, 2016	Initial datasheet	N/A
CDS-0018-04 (Issue B) April 27, 2016	Updated Marking Information	1, 2, 3
CDS-0018-05 (Issue A) July 29, 2016	Updated Specs in "Absolute Maximum Ratings" Table Added "Typical Characteristics" section (graphs) Added "S-Parameters" and "Recommended Soldering Conditions" sections	2, 4, 5

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