

FEATURES

- High Voltage Operation : $V_{DS}=50V$
- High Power : $P_{sat}=45.5dBm$ (typ.)
- High Efficiency : $DE=60\%$ (typ.) @ P_{sat}
- High Gain : $G_p=15.8dB$ (typ.) @ $f=3.8GHz$
- Proven Reliability

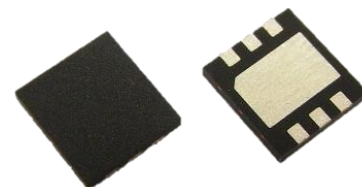
DESCRIPTION

Sumitomo Electric's GaN-HEMT offers high efficiency, ease of matching, greater consistency and broad bandwidth for high power amplifiers with 50V operation, and gives you higher gain.

This new product is ideally suited for use from 3.4 to 4.2 GHz LTE design requirements as it offers high gain, long term reliability and ease of use.

This device target applications are driver stage and final stage of micro cell base transceiver stations.

ABSOLUTE MAXIMUM RATINGS



Item	Symbol	Condition	Rating	Unit
Operating Voltage	V_{DS}	$V_{GS}=-8V$	55	V
Drain-Source Voltage	V_{DS}^*		160	V
Gate-Source Voltage	V_{GS}^*		-15	V
Total Power Dissipation	P_t^*		37.5	W
Storage Temperature	T_{stg}		-40 to +125	deg.C
Channel Temperature	T_{ch}		250	deg.C

* : Case Temperature $T_c=25deg.C$

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
DC Input Voltage	V_{DS}	$RG=15ohm$	≤ 55	V
Forward Gate Current	I_{GF}		≤ 22.4	mA
Reverse Gate Current	I_{GR}		≥ -0.6	mA
Channel Temperature	T_{ch}		≤ 200	deg.C
Average Output Power	$P_{ave.}$		≤ 42.5	dBm

ELECTRICAL CHARACTERISTICS (Case Temperature $T_c=25deg.C$)

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-Off Voltage	V_p	$V_{DS}=50V, I_{DS}=5.76mA$	-3.45	-	-2.45	V
Saturated Power	P_{sat}^*1	$V_{DS}=50V,$ $I_{DS}(DC)\approx 0mA,$ $f=3.8GHz$	44.8	45.5	-	dBm
Drain Efficiency at P_{sat}	DE^*1		54.0	60.0	-	%
Drain Efficiency	η_d^*2	$V_{DS}=50V$ $I_{DS}(DC)\approx 110mA,$ $f=3.8GHz$	12.5	14.5	-	%
Power Gain	G_p^*2		14.6	15.8	-	dB
Gate-Source Voltage without RF	$V_{GS}(DC)$		-3.25	-	-2.25	V
Thermal Resistance	R_{th}^*3		-	5.1	6.0	deg.C/W

Note : *1 : 10%-duty RF pulse (DC supply constant)

*2 : $P_{out}=32dBm$, CW modulation Signal (W-CDMA)

*3: Sampling Test : samples size 10pcs. Criteria(accept / reject)=(0 / 1)

RoHS COMPLIANCE	Yes
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ESD characteristic

Test Methodology	Class
Human Body Model (per ANSI/ESDA/JEDEC JS-001-2014)	1B
Charged-Device Model (per ANSI/ESDA/JEDEC JS-002-2014)	C3

Ordering Information

Part Number	MOQ	MOU	Packing Style
SG38K30S-DT	2500pcs.	2500pcs.	Tape and Reel (16mm width Tape)
SG38K30S-DT1	500pcs.	500pcs.	Tape and Reel (16mm width Tape)
SG38K30S-D	20pcs.	20pcs.	Tray (4-inch)

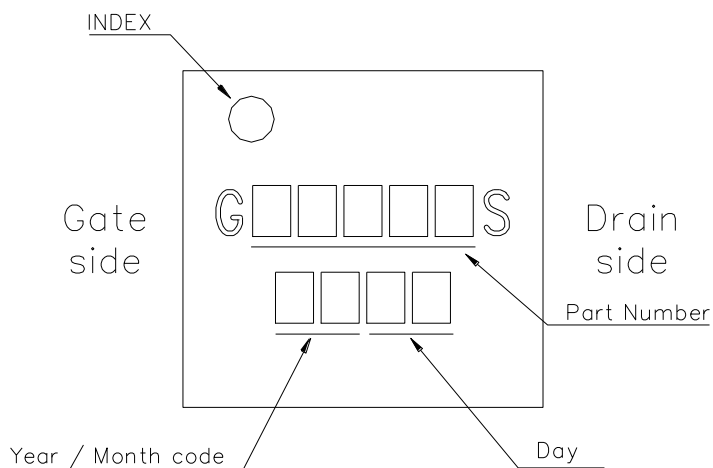
Note : *MOQ stands for Minimum Order Quantity.

*MOU stands for Minimum Order Unit size.

Moisture Sensitivity Level

Level	Floor Life	
	Time	Condition
2	1year after open the package	≤30deg.C/60%RH

Package Markings



Year code

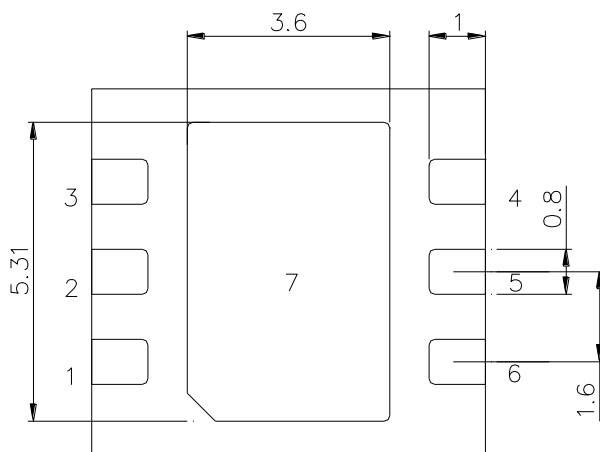
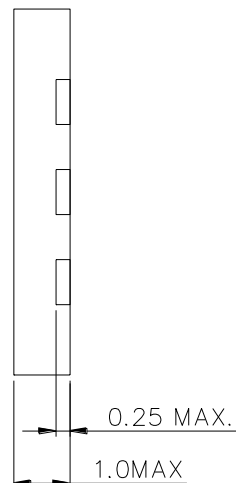
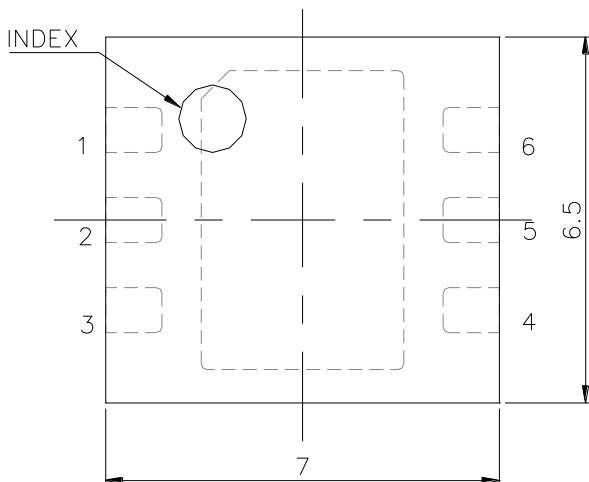
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Code	X	Y	Z	A	B	C	D	E	F

Note: Code letter is cycling 25 alphabet without Q.

Month code

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Code	H	M	N	P	R	S	T	U	W	X	Y	Z

Z2D Package Outline Full Mold Plastic Package



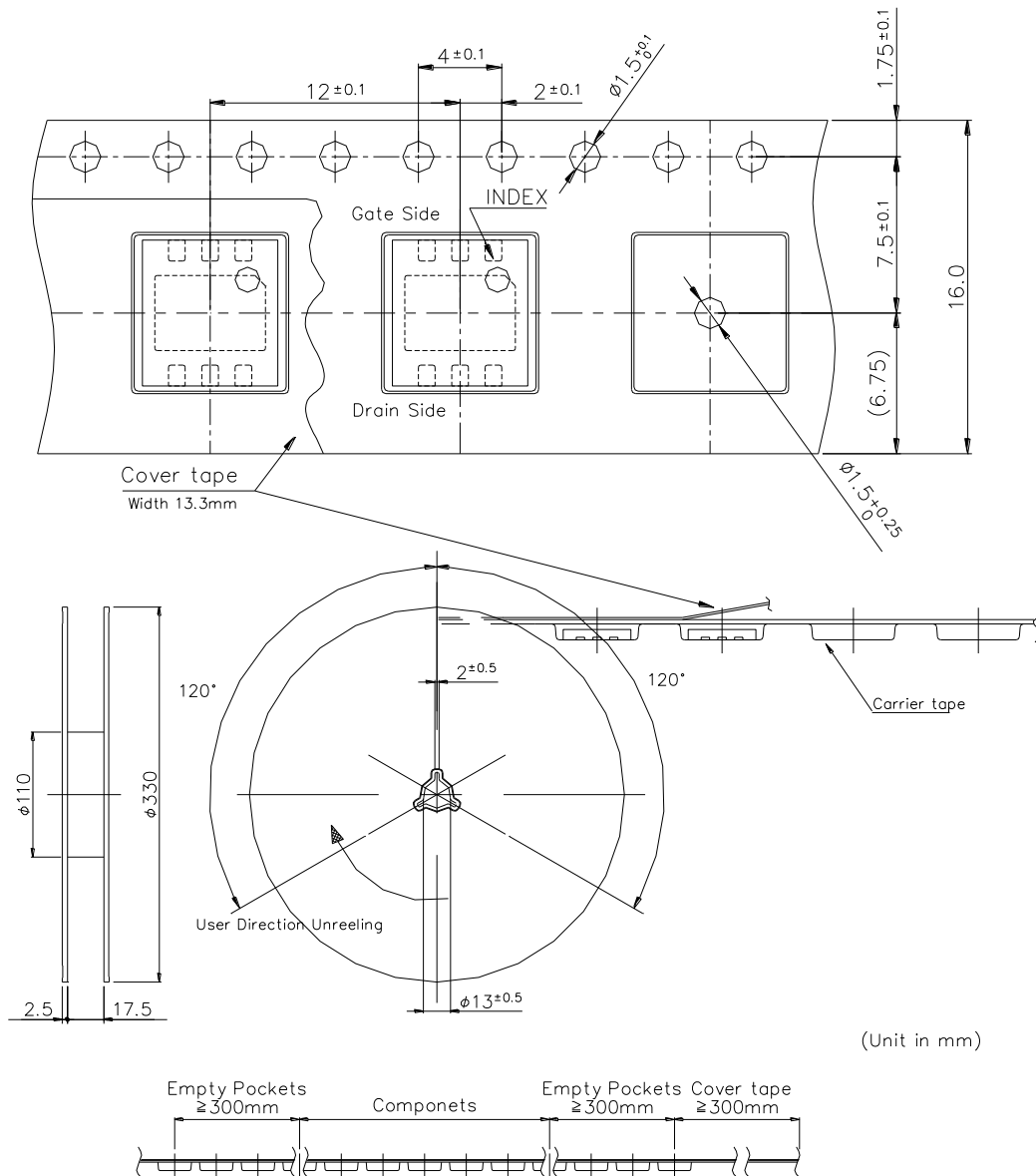
<Single Type>

- 1 : NC
- 2 : Gate
- 3 : NC
- 4 : NC
- 5 : Drain
- 6 : NC
- 7 : Source

Unit: mm
Tolerance : ± 0.15 mm

Index and Tape / Reel Configuration

(Part Number : SG38K30S-DT, SG38K30S-DT1)



Note : Baking of Tape & Reel is possible by following condition.

1. Recommended Baking Condition : 125deg.C, 8hours
2. Upper limit number of times : 5 times

* Reference standard : JIS standard(JIS C 0806-3)