■ Features

- High Power: 190W(Typ.) @ P_{IN}=38dBm
- High Efficiency: 62%(Typ.) @ P_{IN}=38dBm
- Broad Band: 2.85 to 3.3GHz
- Impedance Matched Z_{IN}/Z_{OUT} = 50 ohm
- Long Pulse/High Duty Capable
- Hermetically Sealed Package: IV-Package

■ Description

Sumitomo Electric's GaN-HEMT SGN2833-150L-R offers high power, high efficiency and greater consistency covering 2.85 to 3.3 GHz for S-band radar applications with 50V and long pulse/high duty operation.

ABSOLUTE MAXIMUM RATING (Case Temperature T_c=25 deg.C)

Item	Symbol	Rating	Unit
Operating Voltage	V_{DS}	55	V
Drain-Source Voltage	V_{DS}	250 @ V_{GS}-10V	V
Gate-Source Voltage	V_{GS}	-15	V
Storage Temperature	T_{stg}	-55 to +125	deg.C
Channel Temperature	T_{ch}	+250	deg.C

RECOMMENDED OPERATING CONDITION

Item	Symbol	Condition	Limit	Unit
Drain-Source Voltage	V_{DS}		<=50	V
Forward Gate Current	I_{GF}	Rg=12ohm	<=76	mA
Reverse Gate Current	I_{GR}	Rg=12ohm	>=-5.2	mA
Peak Channel Temperature	$T_{ch\text{-}peak}$		<=200	deg.C
Output Power	P_{out}		<=P_{5dB}	dBm

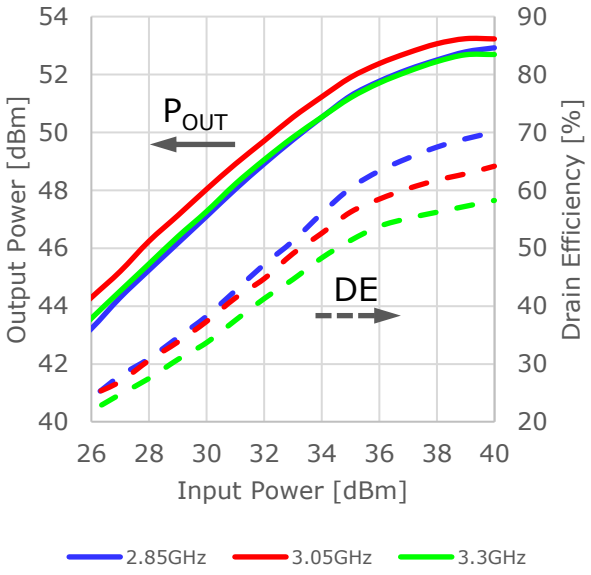
ELECTRICAL CHARACTERISTICS (Case Temperature T_c=25 deg.C)

Item	Symbol	Condition	Limit			Unit
			Min.	Typ.	Max.	
Pinch-off Voltage	V_P	V_{DS}=50V, I_{DS}=28mA	-3.45	-3.00	-2.45	V
Frequency Range	Freq.	V_{DS}=50V-typ. $I_{DS(DC)}$=0.5A-typ. Pulse Width=200µsec. Duty=10% P_{in}=38dBm	2.85	-	3.3	GHz
Output Power	P_{out}		51.8	52.8	-	dBm
Drain Efficiency	DE		-	62.0	-	%
Power Gain	G_P		13.8	14.8	-	dB
Gain Flatness	GF		-	0.7	1.5	dB
Load Mismatch Ruggedness	VSWR		-	10:1	-	-
Thermal Resistance	R_{th}	Channel to Case at 45W P_{DC}	-	1.1	1.3	deg.C/W

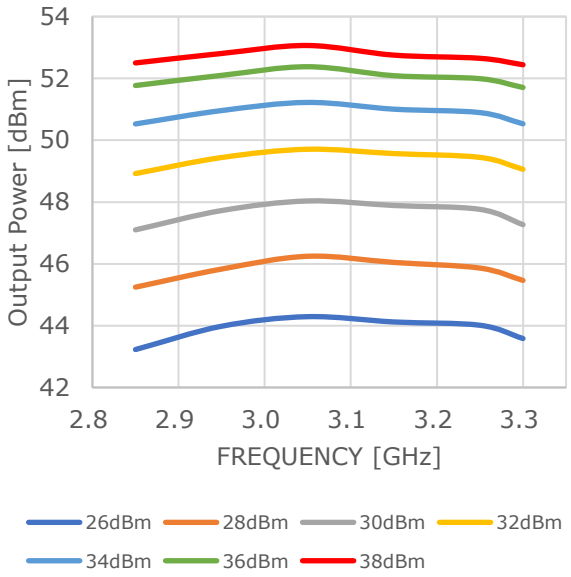
CASE STYLE	IV
RoHS Compliance	YES

■ RF Characteristics

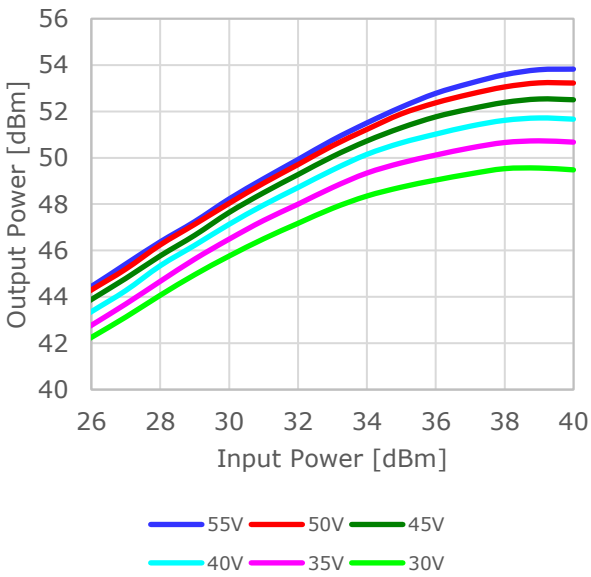
Output Power & Drain Efficiency vs. Input Power
V_{DS}=50V, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%



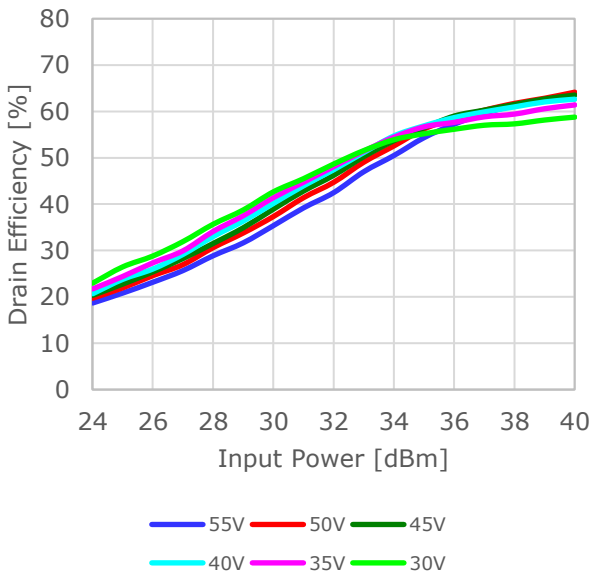
Output Power vs. Frequency by Input Power
V_{DS}=50V, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%



Output Power vs. Input Power by Drain Voltage
f=3.05GHz, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%

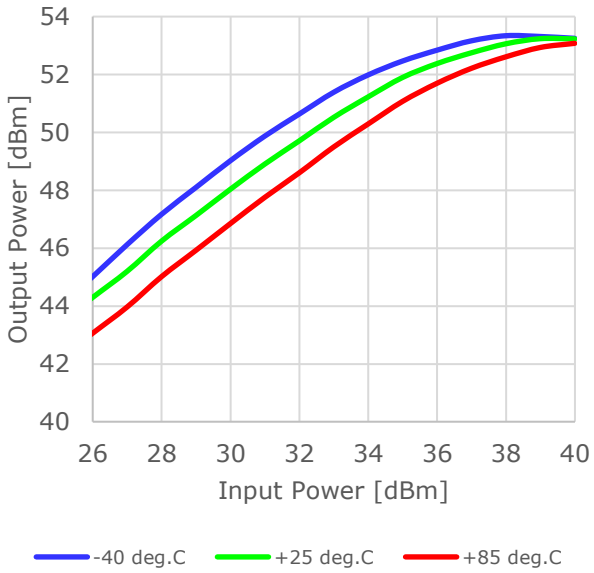


Drain Efficiency vs. Input Power by Drain Voltage
Freq.=3.05GHz, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%

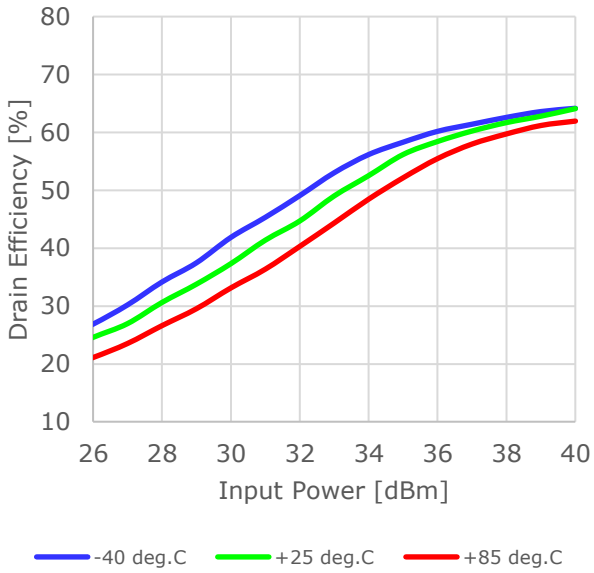


■ RF Characteristics

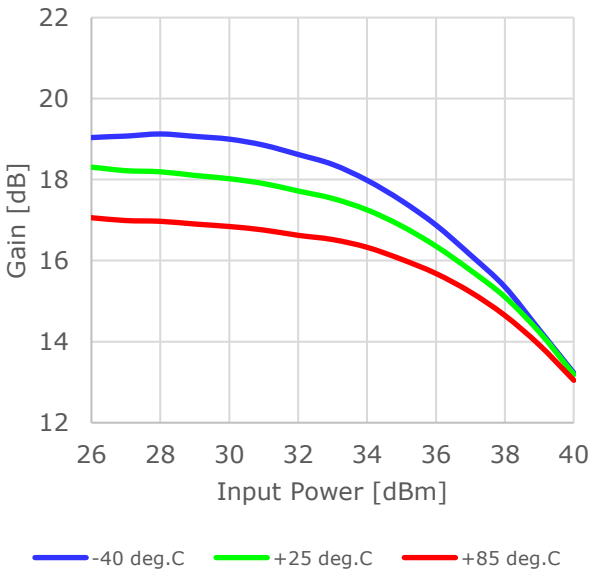
Output Power vs. Input Power
by case temperature
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%



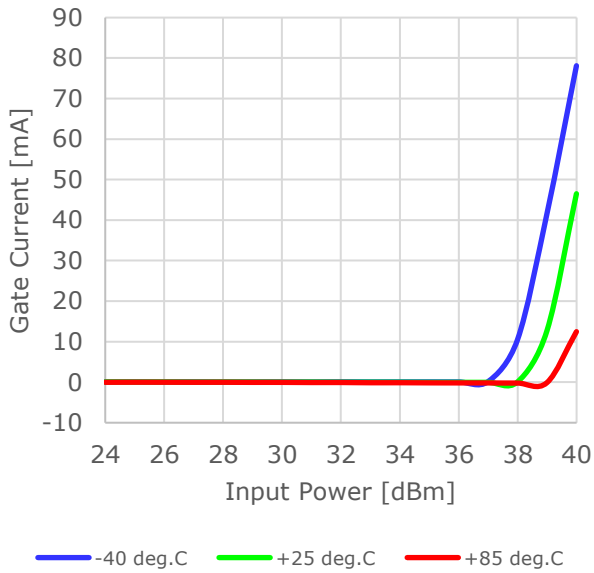
Output Power vs. Input Power
by case temperature
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%



Gain vs. Input Power
by case temperature
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%

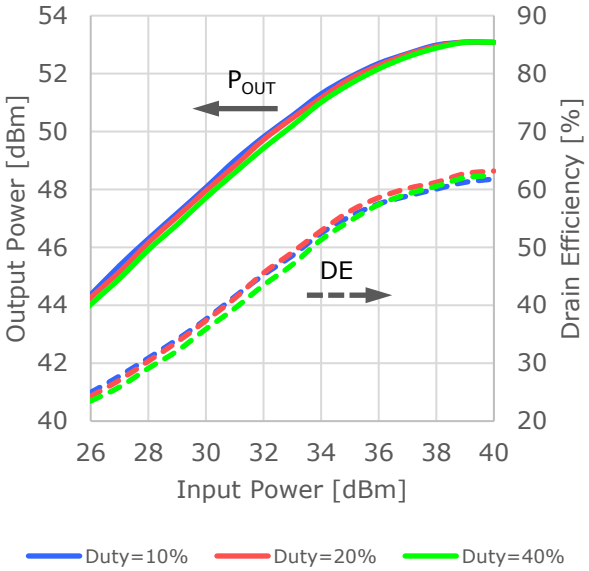


Gate Current vs. Input Power
by case temperature
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
PW=200µsec., Duty=10%

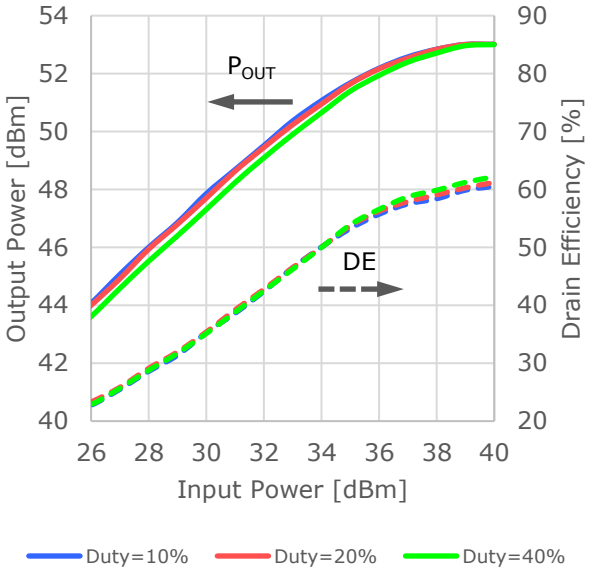


■ RF Characteristics

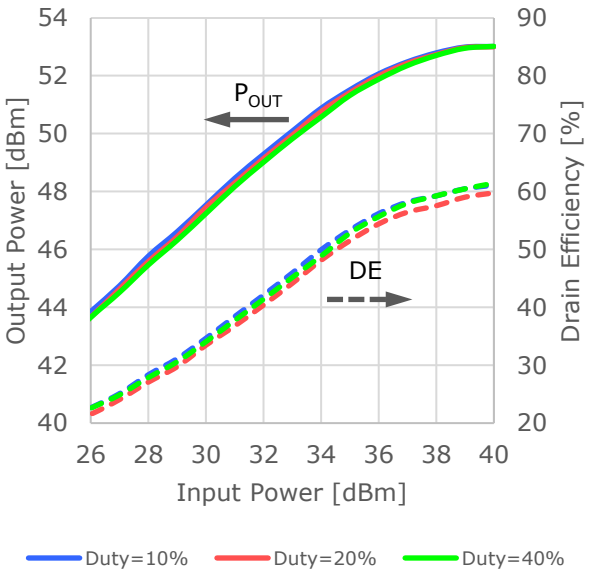
Output Power, Drain Efficiency
vs. Input Power by Duty cycle
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
Pulse width=200µsec.



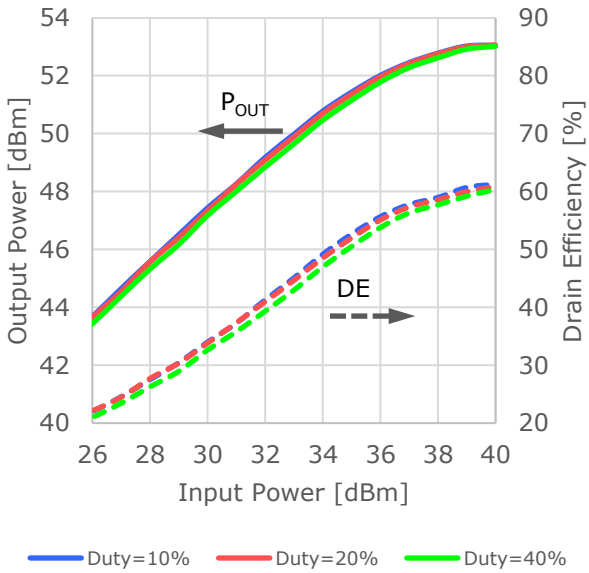
Output Power, Drain Efficiency
vs. Input Power by Duty cycle
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
Pulse width=500µsec.



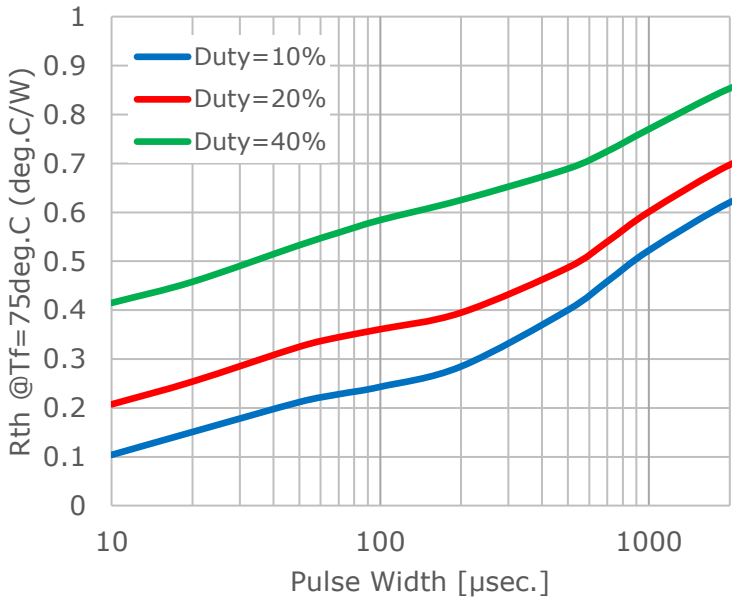
Output Power, Drain Efficiency
vs. Input Power by Duty cycle
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
Pulse width=1000µsec.



Output Power, Drain Efficiency
vs. Input Power by Duty cycle
Freq.=3.05GHz, V_{DS}=50V, $I_{DS(DC)}$=0.5A
Pulse width=2000µsec.

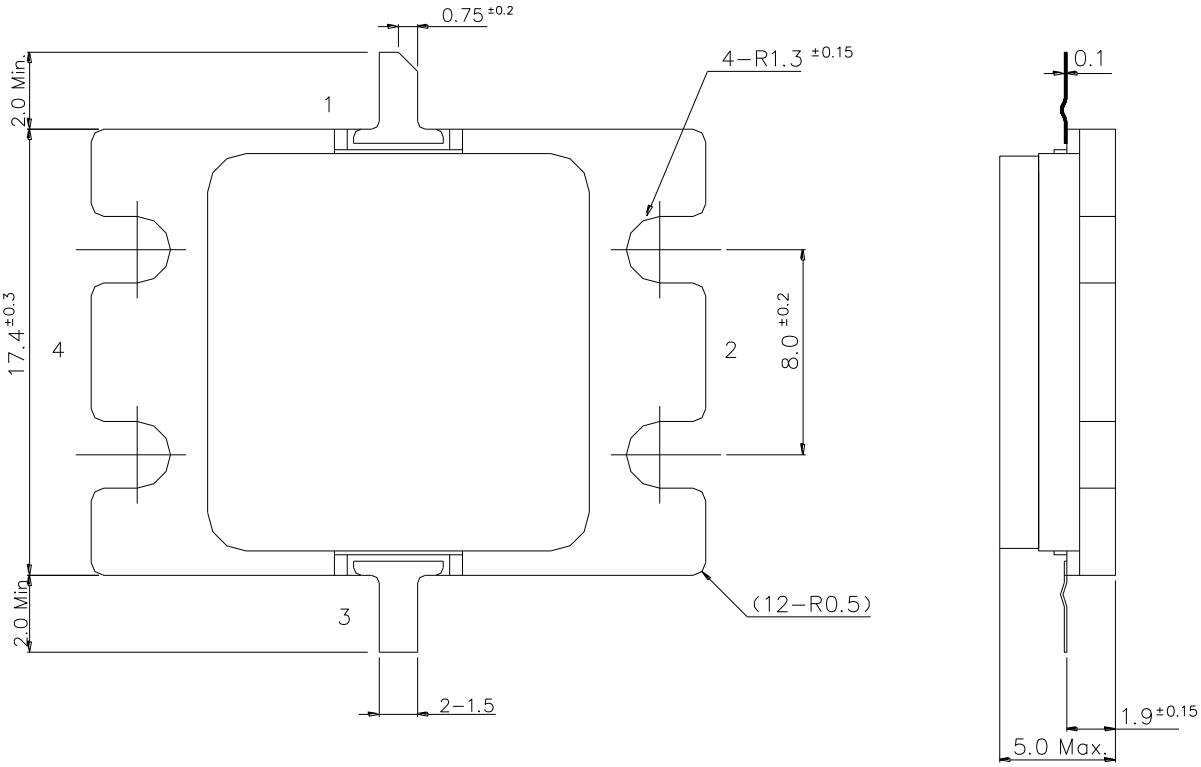


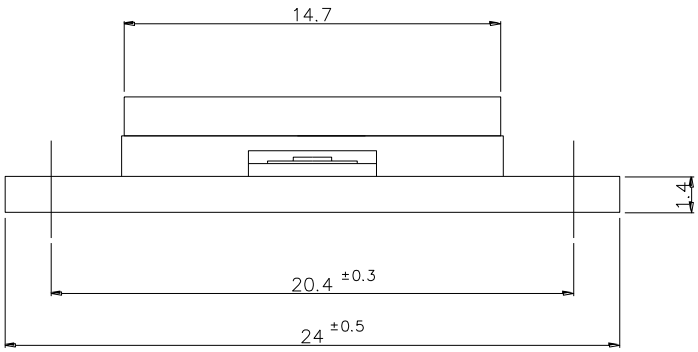
■ Thermal Characteristics In Pulsed Operation



■ Package Outline

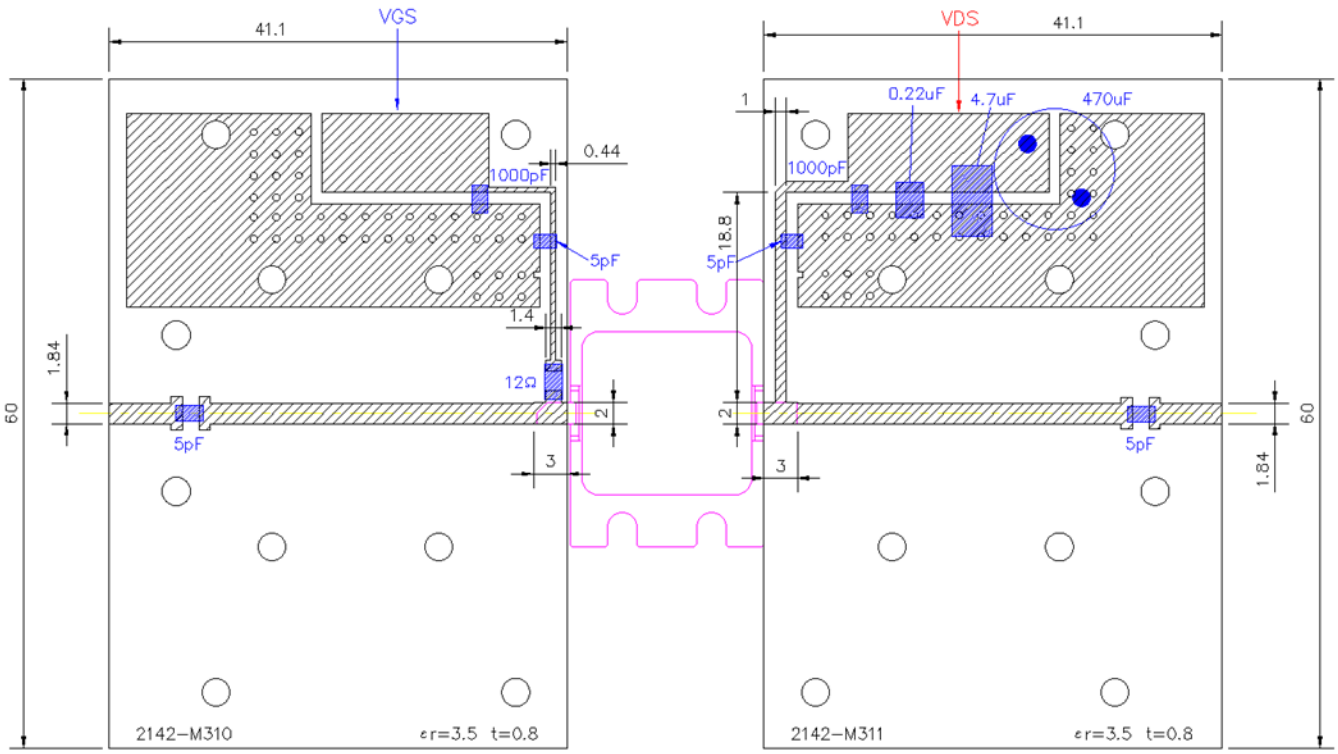
Case Style: IV





1 : Gate
2 : Source(Flange)
3 : Drain
4 : Source(Flange)
Unit : mm

■ Test Fixture



PCB : h=0.8mm , εr=3.5 , Cu=18um
Unit : mm

For Safety, Observe the Following Procedures Environmental Management

- Do not put this product into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Respect all applicable laws of the country when discarding this product.
  This product must be disposed in accordance with methods specified by applicable hazardous waste procedures.

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