GR-65J016JT: TO-247-3L Cascode GaN HEMT (Preliminary)

Description

GR-65J016JT is a normally-off GaN High electron mobility transistor (HEMT) device using the cascode configuration, which provides high breakdown voltage, high current and high operating speed which is suitable for high power applications.

GR-65J016JT (TO-247-3L)

Gate : Pin 1
Drain: Pin 2
Source: Pin 3

Key Specifications

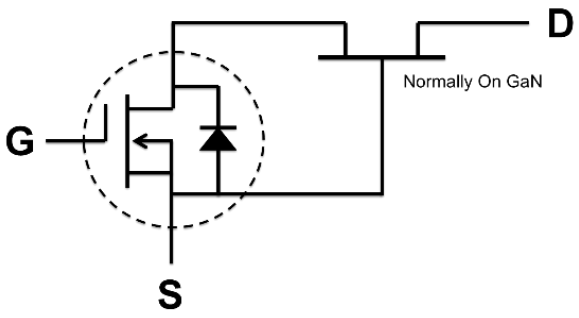
Part Number	GR-65J016JT
V_{DSS}	650V
$V_{(TR)DSS}$	800V
$R_{DS(ON)}$, typ.	16mΩ
Q_G, typ.	62.5nC
Package	TO-247-3L

Features

- Gate drive voltage compatibility (-20V to +20V)
- High operating frequency
- Pin to Pin with CoolMOS/SJ and SiC MOSFET
- Low Qrr

Applications

- Switch Mode Power Supplies (SMPS)
- AC-DC/ DC-DC Converters
- Motor Drives



Cascode Device Structure

1- Electrical Characteristics

➢ Table 1 Absolute maximum ratings

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-source voltage		650	V
V_{GSS}	Gate- source voltage		-20V ~ +20V	V
I_D	Drain current (continuous) at T_C = 25°C operation		84	A
	Drain current (continuous) at T_C = 100°C operation		53	A
$I_{D,Pulse}$	Pulsed drain current (pulse width: 10µs)		315	A
P_D	Maximum power dissipation Tc=25 °C		250	W
T_c	Operating temperature	Case	-55 to +150	°C
T_J		Junction	-55 to +150	°C
T_S	Storage temperature		-55 to +150	°C
T_{SOLD}	Soldering peak temperature[b]		260	°C
MSL	Moisture sensitivity level		MSL3	-

a. In off-state, spike duty cycle D<0.01, spike duration <1µs
b. For 10 sec., 1.6mm from the case

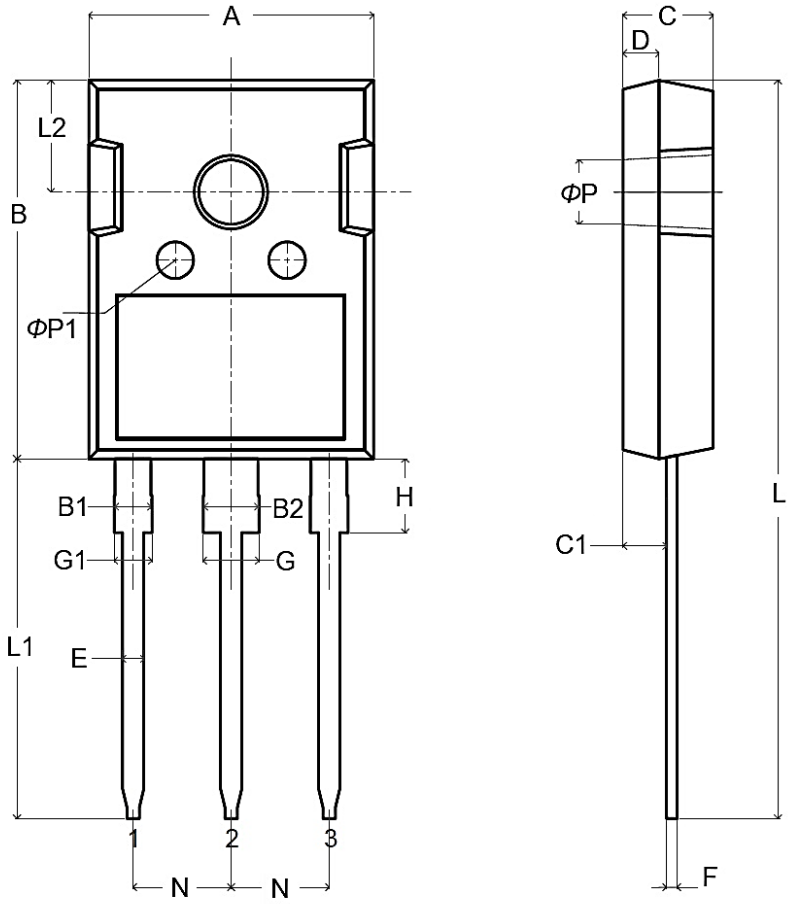
➢ Table 2 Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\Theta JA}$	Thermal resistance junction-ambient	50	°C/W
$R_{\Theta JC}$	Thermal resistance junction-case	0.5	°C/W

➢ **Table 3 Electrical Characteristics** (T_{CASE} = 25 °C unless otherwise stated)

Symbol	Parameter	Conditions	Values			Unit
			min.	typ.	max.	
$V_{(BL)DSS}$	Drain-source voltage	V_{GS}=0V	650	-	-	V
$V_{GS(th)}$	Gate threshold voltage	V_{GS}=V_{DS} , I_D=1mA	2.0	3.0	4.0	V
$R_{DS(on)}$	Static drain-source on-resistance	V_{GS}=10V, I_D=20A, T_J=25°C	-	16	20	mΩ
		V_{GS}=10V, I_D=20A, T_J=150°C	-	30	-	
I_{DSS}	Drain-source leakage current	V_{GS} =0V, V_{DS} =650V, T_J=25°C	-	7.5	150	μA
		V_{GS} =0V, V_{DS} =650V, T_J=150°C	-	55	-	
I_{GSS}	Gate-to-source forward leakage current	V_{GS}=20V	-	-	400	nA
	Gate-to-source reverse leakage current	V_{GS}=-20V	-	-	-400	
C_{ISS}	Input capacitance	V_{GS}=0V, V_{DS}=400V, f=1MHz	-	4059	-	pF
C_{OSS}	Output capacitance		-	269	-	
C_{RSS}	Reverse transfer capacitance		-	5.85	-	
Q_G	Gate charge	V_{GS}=0~10V, V_{DS}=400V, I_{DS} =20A	-	62.5	-	nC
Q_{GS}	Gate-source charge		-	14.7	-	
Q_{GD}	Gate-drain charge		-	24.7	-	
Q_{OSS}	Output charge	V_{GS}=0V, V_{DS}=0~400V	-	362	-	
$t_{D(on)}$	Turn-on delay time	V_{DS}=400V, V_{GS}=0 to 10V, I_{DS}=20A, R_G=45Ω, at 100MHz	-	62	-	ns
t_R	Rise time		-	16.5	-	
$t_{D(off)}$	Turn-off delay time		-	130	-	
t_F	Fall time		-	9.0	-	
Q_{RR}	Reverse recovery charge	Is=20A, V_{DS} =400V	-	44	-	nC

2- Package Outline Dimensions, GR-TO-247-3L

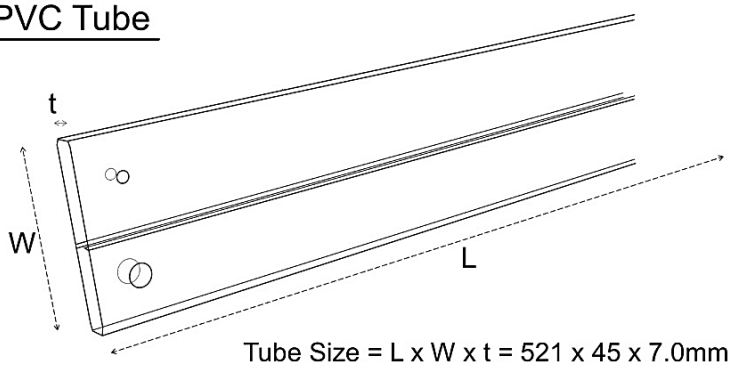


➢ **Table 4 Dimension of GR-TO-247-3L**

SYMBOL	DIMENSION (IN MM)			SYMBOL	DIMENSION (IN MM)		
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.
A	15.6	15.8	16.0	G	2.90	3.10	3.30
B	19.9	21.0	21.2	G1	1.90	2.10	2.30
B1	1.80	2.00	2.20	H	3.90	4.10	4.30
B2	2.80	3.00	3.20	L	40.5	40.95	41.4
C	4.80	5.00	5.20	L1	19.7	19.95	20.2
C1	2.20	2.40	2.60	L2	6.04	6.20	6.30
D	1.90	2.00	2.10	N	5.30	5.44	5.68
E	1.00	1.20	1.40	ΦP1	3.40	3.60	3.80
F	0.50	0.60	0.70	ΦP2	2.20	2.35	2.50

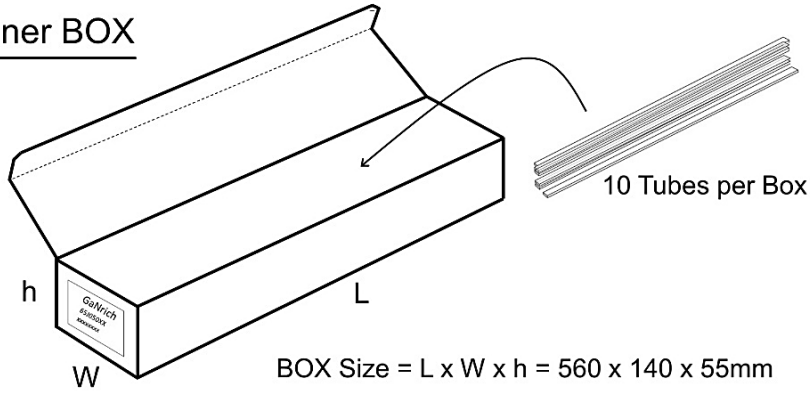
3- Tube Package Information

TO-247-3L, TO-247-4L
PVC Tube



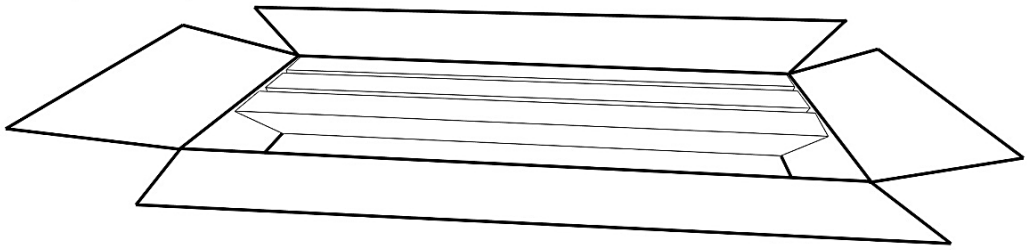
Tube Size = L x W x t = 521 x 45 x 7.0mm

Inner BOX



BOX Size = L x W x h = 560 x 140 x 55mm

Carton



Carton Size = 575 x 160 x 295mm

Package Type	Tube	Inner Box	Carton
TO-247-3L TO-247-4L	30 EA	300 EA	1500 EA
-	-	X10 Tube	X5 Box

4- Change Log

Version	Date	Description
01	Dec 17, 2025	Initial version
02	April 16, 2026	Electrical characteristics revised

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