

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.

Key Specifications

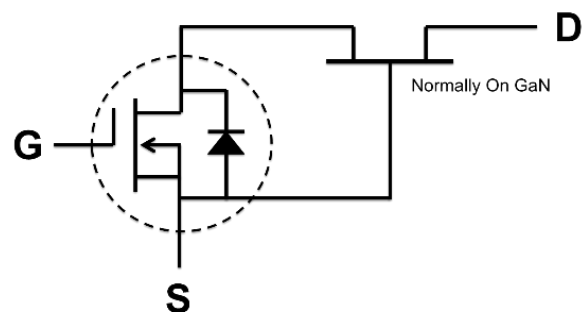
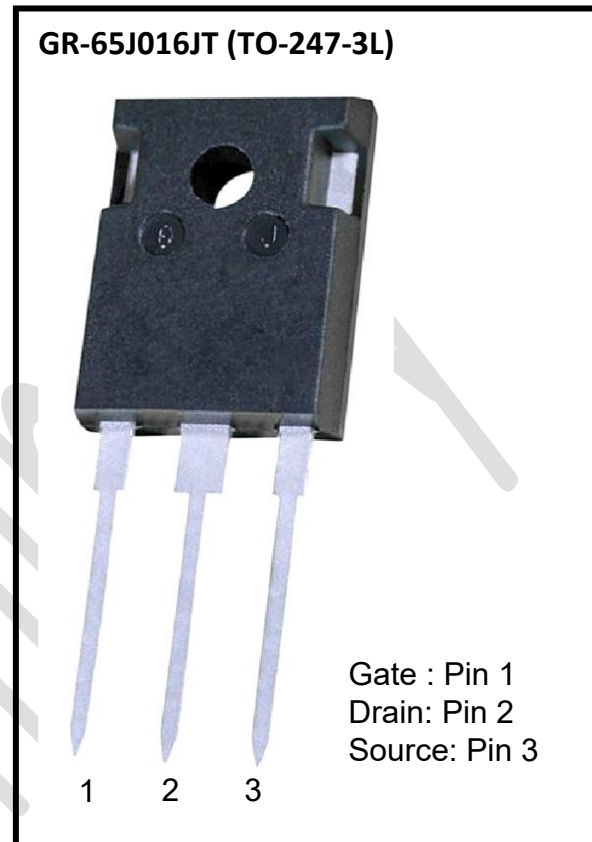
Part Number	GR-65J016JT
V_{DSS}	650V
$V_{(TR)DSS}$	800V
$R_{DS(ON)}$, typ.	16m Ω
Q_G , typ.	62.5nC
Package	TO-247-3L

Features

- Gate drive voltage compatibility (-20V to +20V)
- High operating frequency
- Pin to Pin with CoolMOS/SJ and SiC MOSFET
- Low Q_{rr}
- ESD-resistant
- Comply with JEDEC standards

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 $< 1\mu\text{s}$

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	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal resistance junction-case	0.5	$^\circ\text{C}/\text{W}$

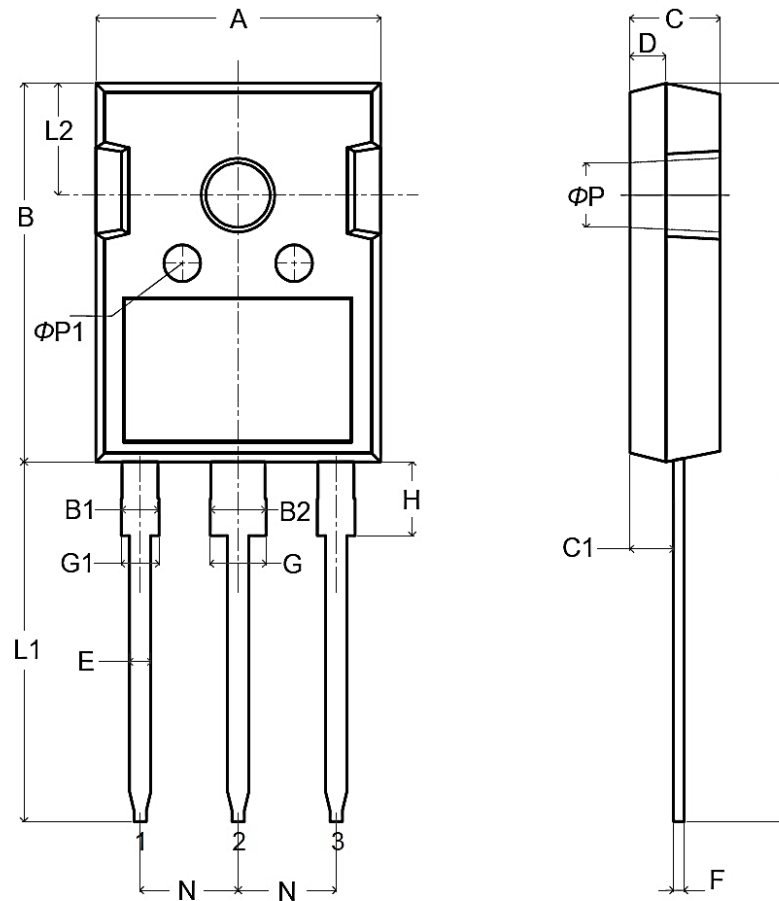
➤ **Table 3 ESD Rating**

Symbol	Reference	Value	Unit
HBM (G-S) (G-D)	ANSI/ESDA/JEDEC JS-001-2024	2000	V
HBM (D-S)	ANSI/ESDA/JEDEC JS-001-2024	8000	V

➤ **Table 4** Electrical Characteristics ($T_{CASE} = 25\text{ }^{\circ}\text{C}$ 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	$V_{GS}=10V$, $I_D=20A$, $T_J=25^{\circ}\text{C}$	-	16	20	$m\Omega$
		$V_{GS}=10V$, $I_D=20A$, $T_J=150^{\circ}\text{C}$	-	30	-	
I_{DSS}	Drain-source leakage current	$V_{GS}=0V$, $V_{DS}=650V$, $T_J=25^{\circ}\text{C}$	-	7.5	150	μA
		$V_{GS}=0V$, $V_{DS}=650V$, $T_J=150^{\circ}\text{C}$	-	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	$V_{GS}=0\sim 10V$, $V_{DS}=400V$, $I_{DS}=20A$	-	62.5	-	nC
Q_{GS}	Gate-source charge		-	14.7	-	
Q_{GD}	Gate-drain charge		-	24.7	-	
Q_{OSS}	Output charge	$V_{GS}=0V$, $V_{DS}=0\sim 400V$	-	362	-	
$t_{D(on)}$	Turn-on delay time	$V_{DS}=400V$, $V_{GS}=0$ to $10V$, $I_{DS}=20A$, $R_G=45\Omega$, 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	$I_S=20A$, $V_{DS}=400V$	-	44	-	nC

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

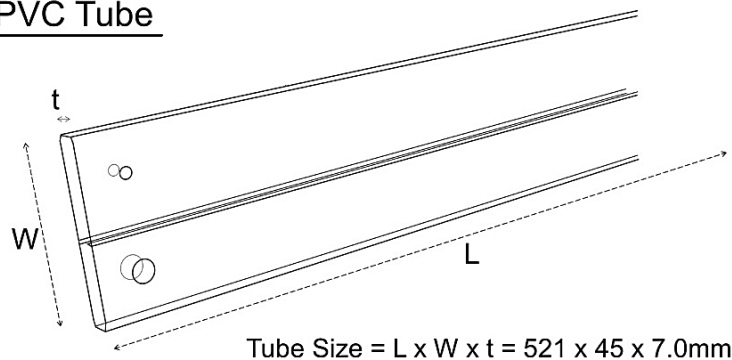


➤ Table 5 Dimension of GR-TO-247-3L

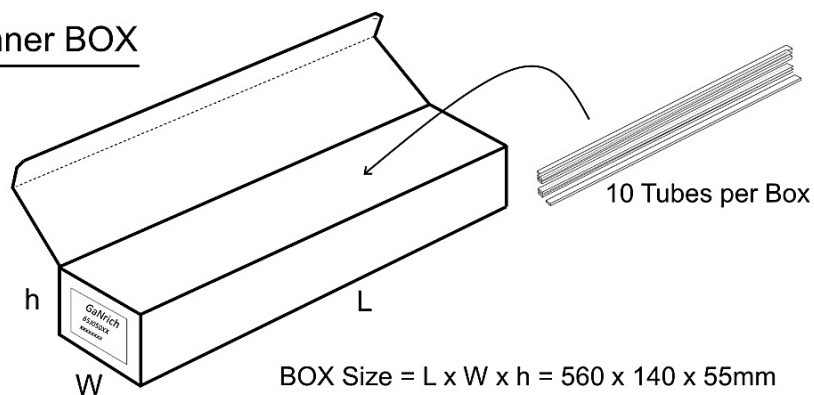
SYMBOL	DIMENSION (IN MM)			SYMBOL	DIMENSION (IN MM)		
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.
A	15.6	15.8	16.0	G	2.90	3.10	3.30
B	19.9	21.0	21.2	G1	1.90	2.10	2.30
B1	1.80	2.00	2.20	H	3.90	4.10	4.30
B2	2.80	3.00	3.20	L	40.5	40.95	41.4
C	4.80	5.00	5.20	L1	19.7	19.95	20.2
C1	2.20	2.40	2.60	L2	6.04	6.20	6.30
D	1.90	2.00	2.10	N	5.30	5.44	5.68
E	1.00	1.20	1.40	ØP1	3.40	3.60	3.80
F	0.50	0.60	0.70	ØP2	2.20	2.35	2.50

3- Tube Package Information

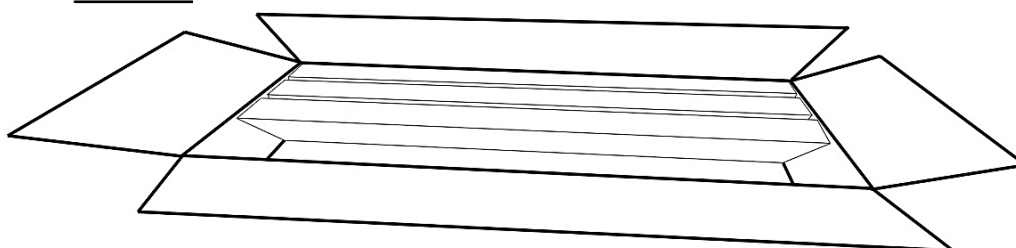
TO-247-3L, TO-247-4L
PVC Tube



Inner BOX



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

- **Note:** GaNrich semiconductor reserves the right to revise products and/or specifications without notice.