

GR-65J016KT: TO-247-4L Cascode GaN HEMT (Preliminary)

Description

GR-65J016KT 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-65J016KT
V_{DSS}	650V
$V_{(TR)DSS}$	800V
$R_{DS(ON)}$, typ.	16m Ω
Q_G , typ.	62.5nC
Package	TO-247-4L

Features

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

Applications

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

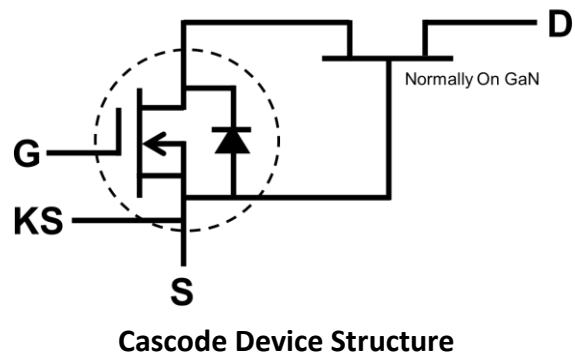
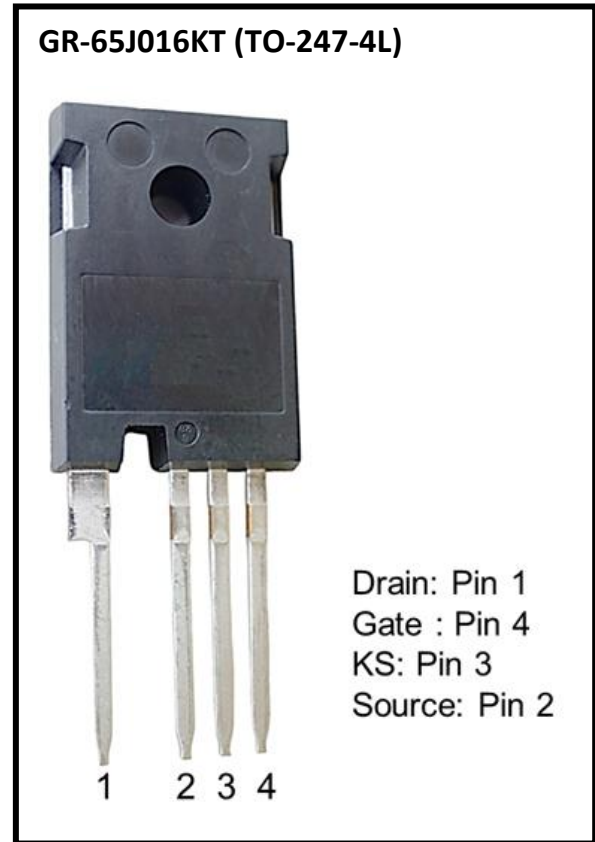


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1- Electrical Characteristics

➤ **Table 1 Absolute maximum ratings**

Symbol	Parameter		Value	Unit
V_{DS}	Drain-source voltage		650	V
V_{GS}	Gate- source voltage		-20V ~ +20V	V
P_{tot}	Total power dissipation @ $T_C = 25^{\circ}\text{C}$		250	W
I_D	Drain current (continuous) at $T_C = 25^{\circ}\text{C}$ operation		84	A
	Drain current (continuous) at $T_C = 100^{\circ}\text{C}$ operation		53	A
I_{DM}	Pulsed drain current (pulse width: 10 μs)		315	A
T_C	Operating temperature	-55 to +150	-55 to +150	$^{\circ}\text{C}$
T_J		-55 to +150	-55 to +150	$^{\circ}\text{C}$
T_S	Storage temperature		-55 to +150	$^{\circ}\text{C}$
T_{SOLD}	Soldering peak temperature ^b		260	$^{\circ}\text{C}$

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

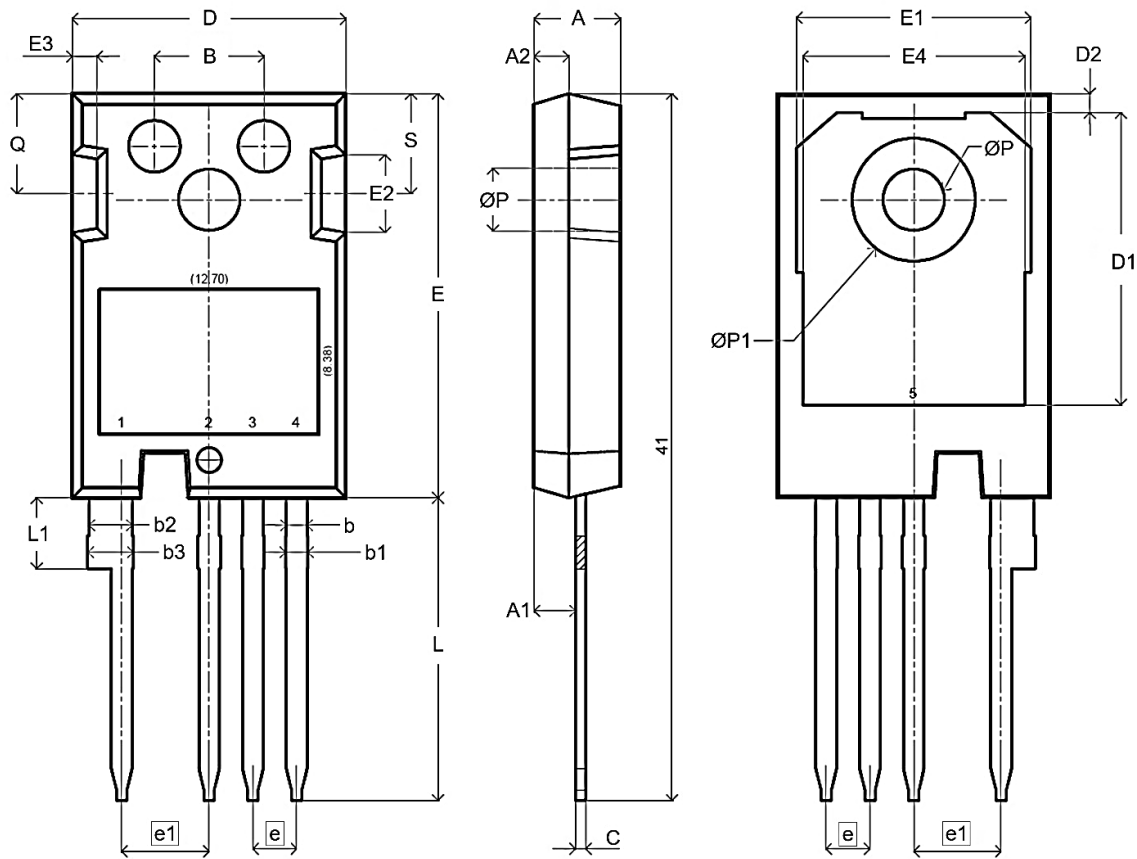
➤ **Table 2 Thermal Characteristics**

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Thermal resistance junction-ambient	50	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Thermal resistance junction-case	0.50	$^{\circ}\text{C}/\text{W}$

➤ **Table 3** 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	mΩ
		$V_{GS}=10V$, $I_D=20A$, $T_J=150^{\circ}\text{C}$	-	30	-	
I_{DSS}	Drain-source leakage current	$V_{GS}=0V$, $V_{DS}=650V$, $T_J=25^{\circ}\text{C}$	-	7.5	75	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 $100MHz$	-	49.6	-	ns
t_R	Rise time		-	13.2	-	
$t_{D(off)}$	Turn-off delay time		-	104	-	
t_F	Fall time		-	7.2	-	
Q_{RR}	Reverse recovery charge	$I_S=20A$, $V_{DS}=400V$	-	44	-	nC
P_D	Maximum power dissipation	$T_c=25\text{ }^{\circ}\text{C}$	-	250	-	W

2- Package Outline Dimensions, GR-TO-247-4L

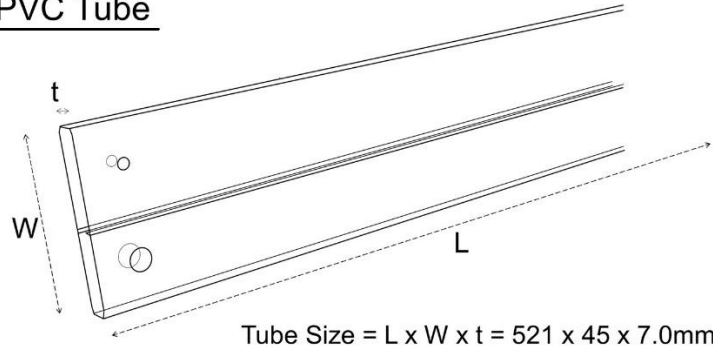


➤ Table 4 Dimension of GR-TO-247-4L

SYMBOL	DIMENSION (IN MM)			SYMBOL	DIMENSION (IN MM)		
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.
A	4.80	5.02	5.24	E	22.5	23.5	24.5
A1	2.20	2.40	2.60	E1	13.1	13.6	14.1
A2	1.90	2.00	2.10	E2	4.30	4.50	4.70
B	6.10	6.35	6.60	E3	1.20	1.45	1.70
b	1.00	1.20	1.40	E4	12.5	12.9	13.3
b1	1.10	1.30	1.50	e	2.54 BSC		
b2	2.40	2.50	2.60	e1	5.08 BSC		
b3	2.50	2.65	2.80	L	16.5	17.5	18.5
C	0.50	0.60	0.70	L1	4.00	4.10	4.20
D	15.70	15.90	16.10	ØP	3.40	3.60	3.80
D1	16.25	16.95	17.65	ØP1	7.00	7.20	7.40
D2	0.95	1.10	1.25	S	6.00	6.15	6.30
-	-	-	-	Q	5.50	5.75	6.00

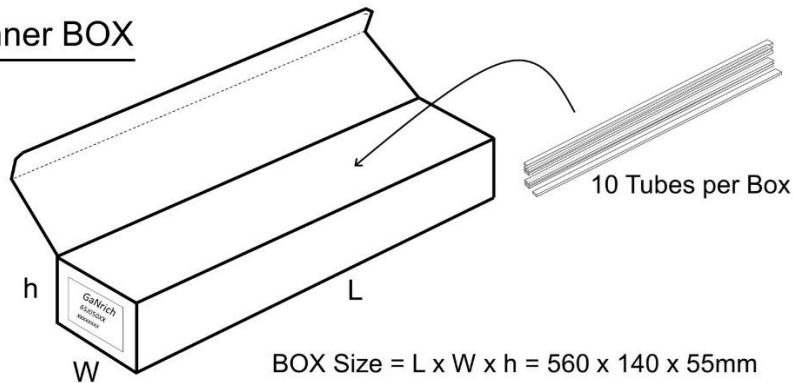
3- Tube Package Information

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



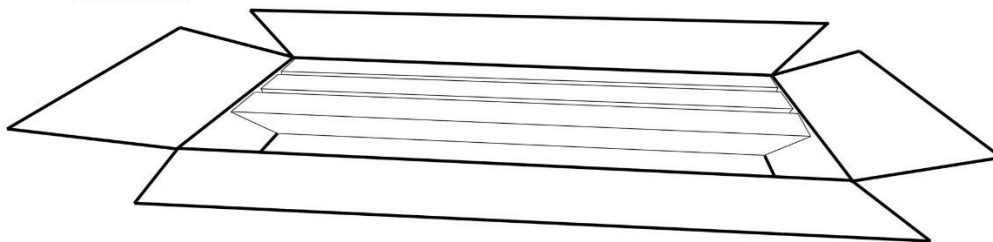
Tube Size = L x W x t = 521 x 45 x 7.0mm

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		

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