GR-15E007GJ: E-mode GaN Power Transistor

Description

GR-15E007GJ is an enhancement mode GaN on Silicon power transistor. 15E007GJ provides, high current and high operating speed which is suitable for DC to DC power supply applications.

Key Specifications

Part Number	GR-15E007GJ
V_{DSS}, min.	150V
$I_{DS,\ Pulse\ (25°C,\ TPULSE\ =\ 300\ \mu s)}$	102A
$R_{DS(ON),\ typ.\ @Vgs=5V}$	7.2mΩ
Q_G, typ.	8.5nC

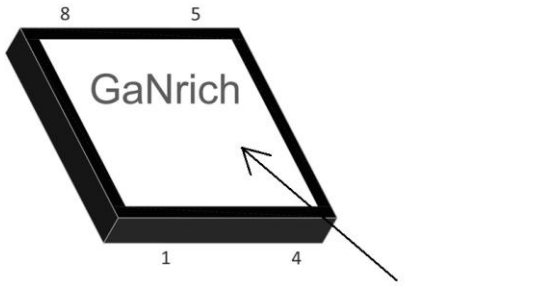
Features

- 150V enhancement mode power transistor
- High operating frequency
- RDS(on) = Typ. 7.2 mΩ
- RoHS compliant

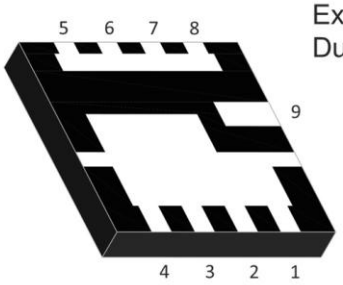
Applications

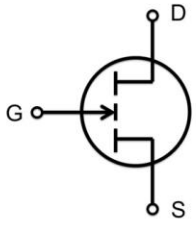
- Switch Mode Power Supplies (SMPS)
- DC-DC Converters
- Fast Battery Charging
- Appliance Motor Drives

GR-15E007GJ, RQFN-3x3



Exposed Die
Dual Side Cooling





Drain	5, 6, 7, 8
Source	1, 2, 3, 4
Gate	9

1. Electrical Characteristics

➢ Table 1 Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-source voltage	150	V
$V_{(TR)DSS}$	Transient drain to source voltage[a]	180	V
V_{GSS}	Gate- source voltage	-6V ~ +6V	V
I_D	Drain current (continuous) at T_C = 25°C operation	32.8	A
	Drain current (continuous) at T_C = 100°C operation	22.6	A
$I_{D,Pulse}$	Pulsed drain current (pulse width: 300μs, Vgs=5V)[b]	101.6	A
T_J	Operating temperature	-40 to +150	°C
T_S	Storage temperature	-40 to +150	°C
MSL	Moisture sensitivity level	MSL3	-

a. In off-state, spike duty cycle D<0.01, spike duration <1μs
b. Defined by product design and characterization. Value is not tested to full current in production

➢ Table 2 Thermal Characteristics

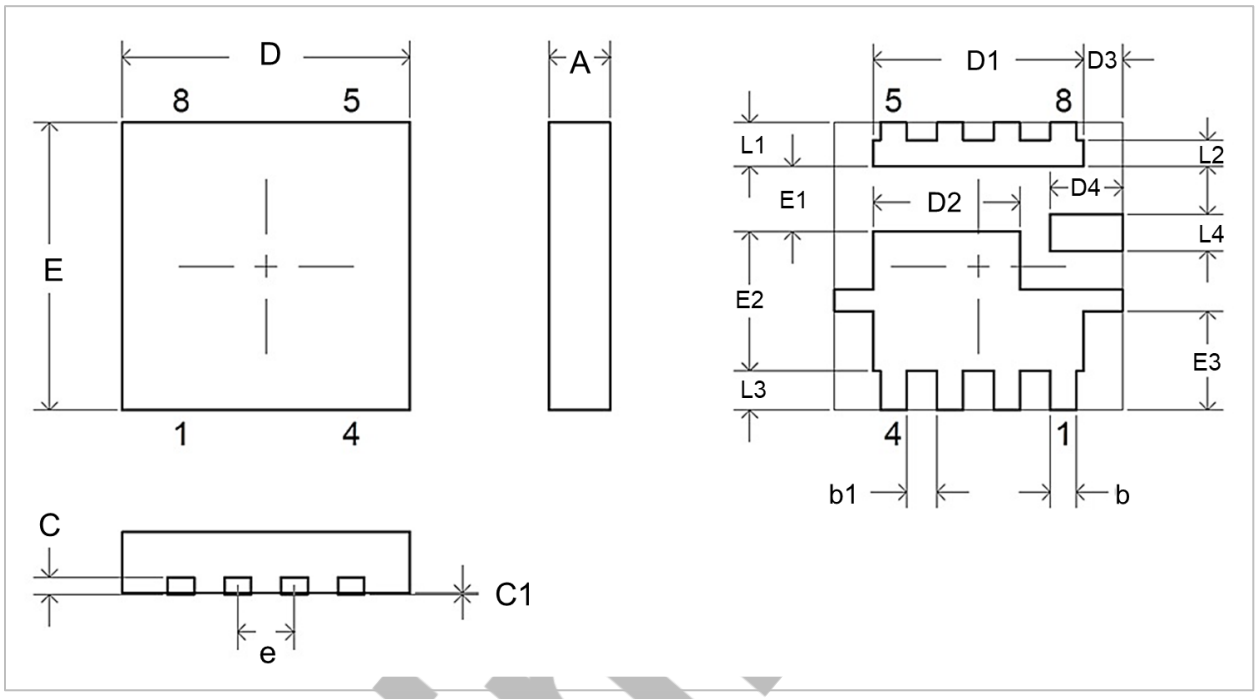
Symbol	Parameter	Value	Unit
$R_{\Theta JC\_Top}$	Thermal resistance junction-case, Top	0.65	°C/W
$R_{\Theta JC\_Bot}$	Thermal resistance junction-case, Bottom	0.80	°C/W
$R_{\Theta JA}$	Thermal resistance junction-ambient	60	°C/W

a. Tested in package DFN 3x3.

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

Symbol	Parameter	Conditions	Values			Unit
			min.	typ.	max.	
V_{DSS}	Drain-source voltage	V_{GS}= 0V, I_D= 150μA	150	-	-	V
$V_{GS(th)}$	Gate threshold voltage	V_{DS}=V_{GS}, I_D= 15mA	0.8	1.2	1.8	V
$R_{DS(on)}$	Drain-source on-resistance	V_{GS}= 5V, I_D= 50A	-	7.2	9.4	mΩ
I_{DSS}	Drain-source leakage current	V_{DS}= 120V, V_{GS}= 0V	-	5.0	400	uA
I_{GSS}	Gate-to-Source Forward Leakage current	V_{GS} = +5V	-	0.036	7.2	mA
	Gate-to-Source Forward Leakage current	V_{GS} = +5V, T_J=125°C	-	0.30	9.0	mA
	Gate-to-Source Reverse Leakage current	V_{GS} = -4V	-	0.03	0.9	mA
C_{ISS}	Input capacitance	V_{DS}=75V, V_{GS}=0V	-	440	-	pF
C_{OSS}	Output capacitance		-	215	-	
C_{RSS}	Reverse transfer capacitance		-	24.7	-	
Q_G	Gate charge	V_{DS}= 75V, V_{GS}= 5V, I_D= 50A	-	8.5	-	nC
Q_{GS}	Gate-source charge	V_{DS}= 75V, I_D= 50A	-	2.0	-	
Q_{GD}	Gate-drain charge		-	1.9	-	
Q_{OSS}	Output charge	V_{DS}= 75V, V_{GS}= 0V	-	26	-	
Q_{RR}	Source-Drain Recovery Charge	-	-	0	-	

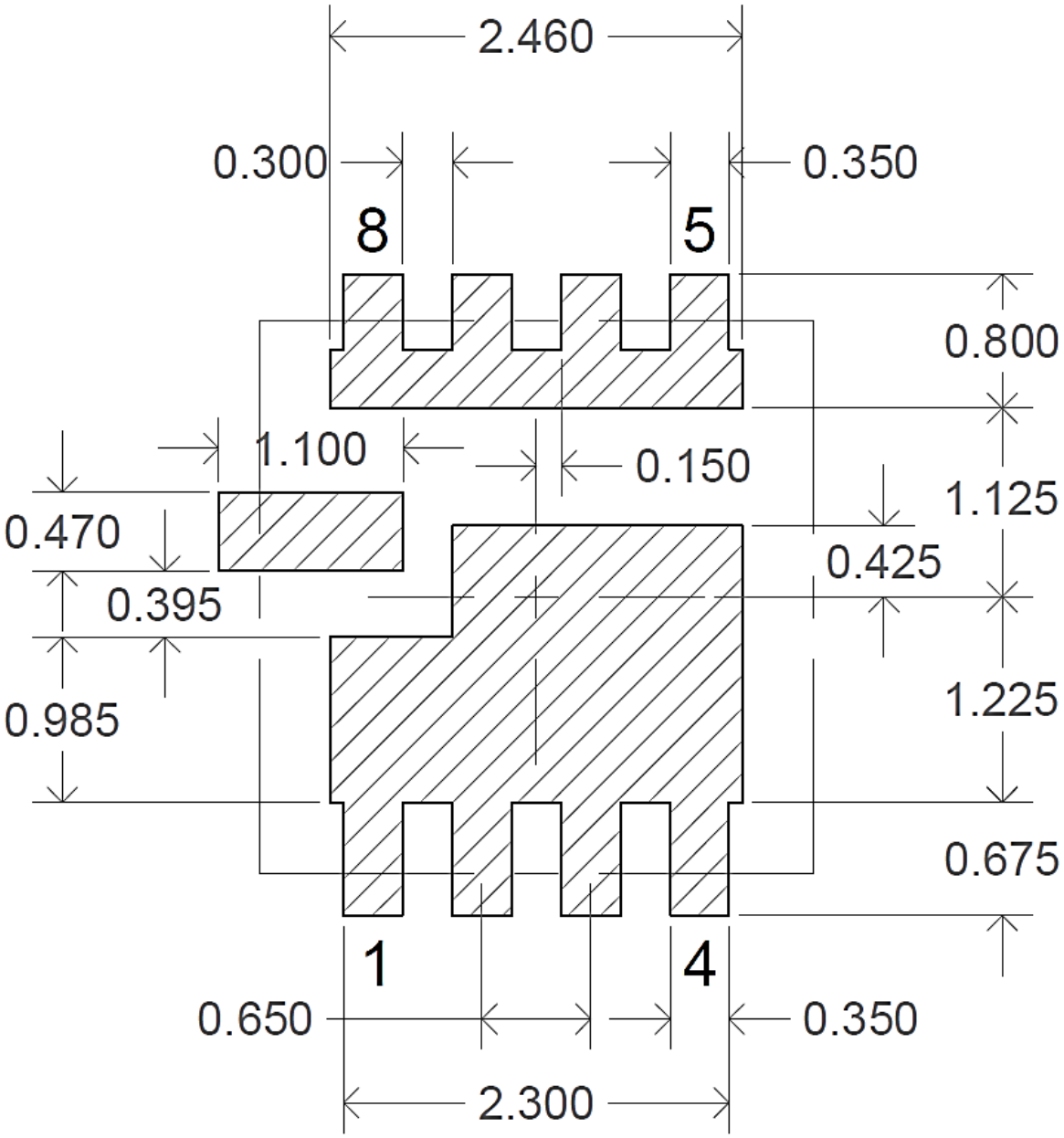
2. Package Outline Dimensions



➢ **Table 4 Dimension of GR-RQFN-3x3**

SYMBOL	DIMENSION (IN MM)			SYMBOL	DIMENSION (IN MM)		
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.
A	---	---	0.70	**D3**	0.345	0.445	0.545
C	0.203 REF			**D4**	0.730	0.830	0.930
C1	---	---	0.05	**E1**	0.650	0.750	0.850
D	3.20	3.30	3.40	**E2**	1.500	1.600	1.700
E	3.20	3.30	3.40	**E3**	1.035	1.135	1.235
e	0.65 BSC			**L1**	0.400	0.500	0.600
b	0.20	0.30	0.40	**L2**	0.200	0.300	0.400
b1	0.25	0.35	0.45	**L3**	0.350	0.450	0.550
D1	2.31	2.41	2.51	**L4**	0.320	0.420	0.520
D2	1.58	1.68	1.78	---	---	---	---

3. Recommended PCB footprint (Umit: mm)



*All dimensions are in units mm

*Not to Scale

4. Change Log

Version	Date	Description
0.1	March 28, 2025	Initial version
0.2	April 16, 2026	Electrical characteristics revised

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