

650V GaN FET

Datasheet

1. Description

The KX2N65R200PD, 650V, 3V V_{th} , 200m Ω Gallium Nitride (GaN) FETs are hybrid normally-off Gallium Nitride (GaN) field effect transistors with the strongest gate and the lowest reverse voltage drop of all wide-band-gap devices in the market. They allow simple gate drive, offer best-in-class performance and outstanding reliability.

Features

- Strong gate with a high threshold, no need for negative gate drive, and a high repetitive input voltage tolerance of $\pm 20V$.
- Fast turn-on/off speed for reduced cross-over losses.
- Low Q_G and simple gate drive for lowest driver consumption at high frequencies.
- Lowest V_F in off-state reverse conduction among all GaN FETs for low loss during dead-times.
- Low Q_{RR} for outstanding hard-switched bridge applications.
- High spike tolerance of 800V for enhanced reliability.

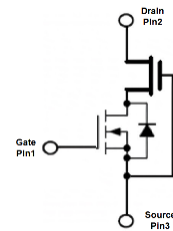
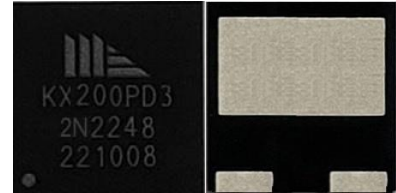
Benefits

- Enable very high conversion efficiencies.
- Enable higher frequency for compact power supplies.
- End-product cost & size savings due to reduced cooling requirements
- Improved safety & reliability due to cooler operation temperature

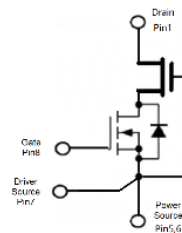
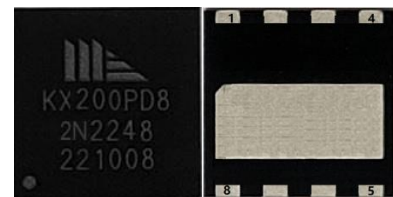
Applications

- High-frequency compact chargers with QR or ACF flyback topologies.
- Half-bridge buck/boost, totem-pole PFC circuits or inverter circuits
- High-efficiency/High-frequency LLC or other soft-switching topologies.

- 1) Duty < 1%, spike duration < 1 μ s, nonrepetitive
- 2) Dynamic on-resistance, see below figures



KX2N65R200PD3



KX2N65R200PD8

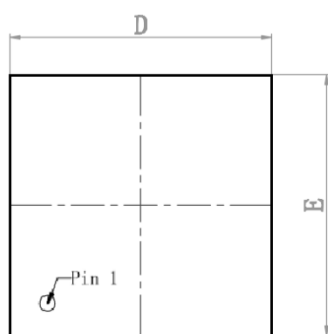
Key Performance Parameters	
$V_{DSS}(V)$	650
$V_{DSS(PK)}(V)$ ¹⁾	800
$R_{DS(ON)}(m\Omega)$ typ ²⁾	200
$V_{th}(V)$	3.0
$Q_{oss}(nC)$ typ	37
$Q_G(nC)$ typ	12.6
$Q_{RR}(nC)$ typ	37.5

Package Information	
Part #	Package
KX2N65R200PD3	DFN8x8-3
KX2N65R200PD8	DFN8x8-8

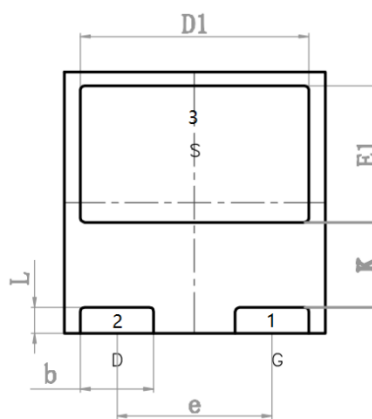
2.Package Dimensions

2.1 DFN8x8-3 Package Outline Drawing

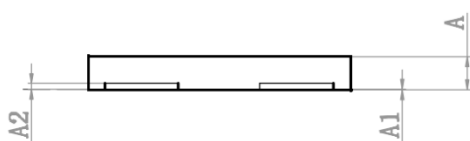
Dimension Symbol	MIN	NOM	MAX	Dimension Symbol	MIN	NOM	MAX
A	0.90	1.00	1.10	K	---	2.50	---
A1	0.00	---	0.05	b	2.15	2.25	2.35
A2	---	0.20	---	L	0.70	0.80	0.90
D	7.90	8.00	8.10	e	---	4.75	---
D1	6.90	7.00	7.10	DFN 8x8-3 (KuanXin: KX*N65R***PD3)			
E	7.90	8.00	8.10				
E1	4.10	4.20	4.30	Unit:	mm	Date:	Jul.,2022



Top View



Bottom View

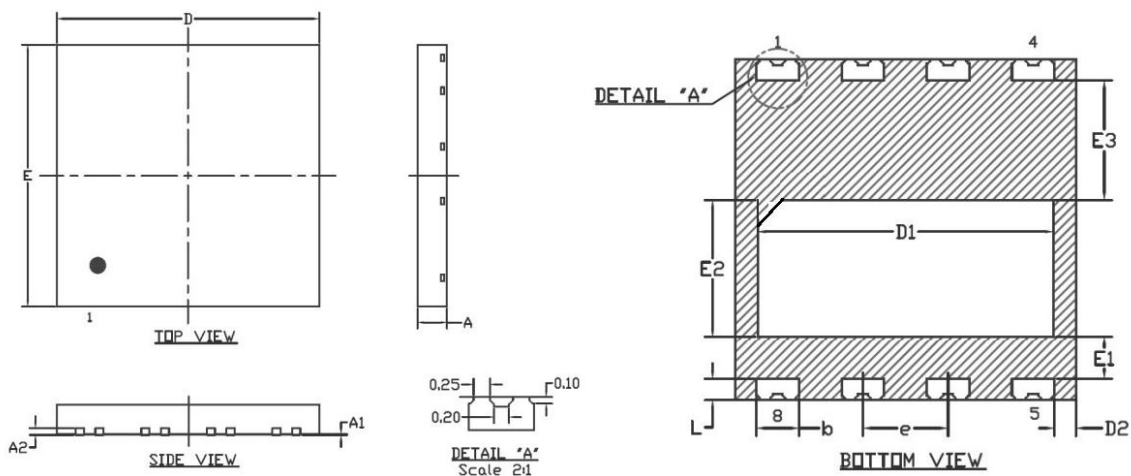


Side View

Pad	Number
G	1
D	2
S	3

2.2 DFN8x8-8 Package Outline Drawing

Dimension Symbol	MIN	NOM	MAX	Dimension Symbol	MIN	NOM	MAX
A	0.90	1.00	1.10	E1	0.90	1.00	1.10
A1	0.00	0.02	0.05	E2	3.10	3.20	3.30
A2	---	0.20	---	E3	2.70	2.80	2.90
b	0.95	1.00	1.05	e	2.00		
D	8.00			L	0.40	0.50	0.60
D1	6.84	6.94	7.04	DFN 8x8-8 (KuanXin: KX*N65R***PD8)			
D2	0.40	0.50	0.60				
E	8.00			Unit:	mm	Date:	Jul.,2022



Pad	Number
D	1,2,3,4
S	5,6
Kelvin	7
G	8
Thermal Pad	9

3.Revision History

Revision No.	Date	Description of Change(s)
Rev0.1	2022-07-18	Briefing Draft