

# BRGN250N65YK

Rev.B Jun.-2022



DFN8 8-3L          650V GaN

650V GaN Enhancement-mode Power Transistor in a DFN8×

## / Absolute Maximum Ratings(Ta=25 )

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	650	V
Transient Drain to Source Voltage <sup>1</sup>	$V_{(TR)DSS}$	725	V
Drain Current – Pulsed	$I_{DM}$	30	A
Gate-Source Voltage	$V_{GS}$	$\pm 18$	V
Continuous current, Drain Source ( $T_C=25^\circ C$ ) <sup>2</sup>	$I_D$	6.5	A
Continuous current, Drain Source ( $T_C=100^\circ C$ ) <sup>2</sup>		4.0	A
Power Dissipation	$P_D(T_C=25^\circ C)$	21	W
Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 to 150	
Thermal Resistance, Junction - Case	$R_{\theta JC}$	5.9	/ W
Thermal Resistance, Junction - Ambient	$R_{\theta JA}$	50	/ W

## Notes

- In off-state, spike duty cycle  $D \leq 0.01$ , spike duration  $\leq 1\mu s$
- For increased stability at high current operation

## / Electrical Characteristics(Ta=25 )

## Static Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Breakdown Voltage	$V_{(BL)DSS}$	$V_{GS}=0V$	650			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=650V, V_{GS}=0V$			15	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 18V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=500\mu A$	1.1	2.0	2.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=8V, I_D=5A$		250	330	m
		$V_{GS}=8V, I_D=5A, T_J=150^\circ C$		500		

## Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	$C_{iss}$	$V_{DS}=400V, V_{GS}=0V$ $f=1.0MHz$		760		pF
Output Capacitance	$C_{oss}$			16		
Reverse Transfer Capacitance	$C_{rss}$			2		
Output Capacitance, Energy related	$C_{o(er)}$	$V_{GS}=0V; V_{DS}=0\sim 400V$		24		pF
Output Capacitance, Time related	$C_{o(tr)}$			47		

## / Electrical Characteristics(Ta=25 )

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=0\sim 8V,$ $V_{DS}=400V,$ $I_D=4A,$ $R_g=30\ \Omega$		20		ns
Turn-On Rise Time	$t_r$			4		
Turn-Off Delay Time	$t_{d(off)}$			52		
Turn-Off Fall Time	$t_f$			10		
Total Gate Charge	$Q_g$	$V_{GS}=0\sim 8V,$ $V_{DS}=400V,$ $I_D=4A$		9.5		nC
Gate Source Charge	$Q_{gs}$			2.7		
Gate Drain Charge	$Q_{gd}$			2.5		
Output Charge	$Q_{OSS}$	$V_{GS}=0V, V_{DS}=0\sim 400V,$		19		nC

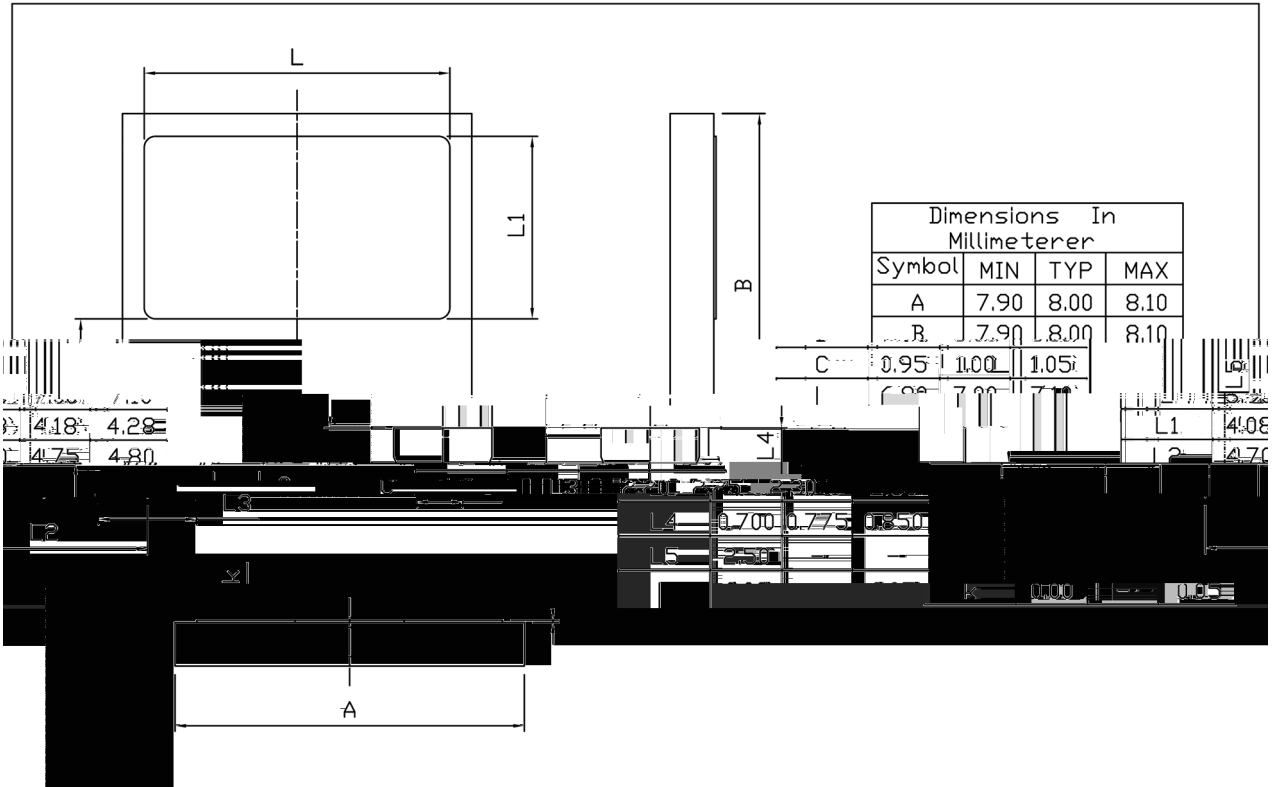
**Reverse Conduction Characteristics**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Voltage	$V_{SD}$	$I_S=2A, V_{GS}=0V$		1.2		V
Pulsed Current, Reverse	$I_S$	$V_{GS} = 0V; T_C=100$ 25% duty cycle			4.0	A
Reverse Recovery Time	$t_{RR}$	$I_S=4A V_{DS}=400V$ $di/dt=1000A/us$		15		ns
Reverse Recovery Charge	$Q_{RR}$			22		nC

**/ Package Dimensions**

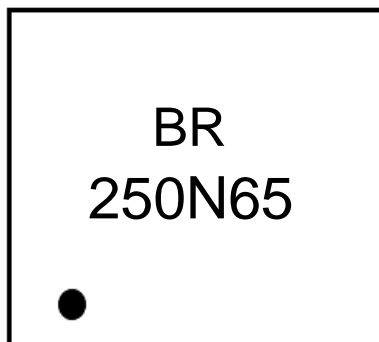
DFN8×8-3L

Unit:mm



02111 Rev.0022

/ Marking Instructions



250N65

Note

BR                    Company Code

250N65            Product Type

\*\*\*\*:                Lot No. Code, code change with Lot No

( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)


- |   |     |     |       |         |  |
|---|-----|-----|-------|---------|--|
| 1 | 150 | 180 | 60    | 90sec;  | Note:<br>1.Preheating:150~180 , Time:60~90sec. |
| 2 | 245 | 5   | 5     | 0.5sec; | 2.Peak Temp.:245 5 , Duration:5 0.5sec.        |
| 3 | 2   | 10  | /sec. |         | 3. Cooling Speed: 2~10 /sec.                   |