

BRGN250N65YK

Rev.B Jun.-2022



DFN8×8-3L 650V GaN

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

/ Absolute Maximum Ratings($T_a=25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	650	V
Transient Drain to Source Voltage ¹	V_{TR_DSS}	725	V
Drain Current – Pulsed	I_{DM}	30	A
Gate-Source Voltage	V_{GS}	± 18	V
Continuous current, Drain Source $T_c=25^\circ\text{C}$ ²	I_D	6.5	A
Continuous current, Drain Source $T_c=100^\circ\text{C}$ ²		4.0	A
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	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

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

/ Electrical Characteristics($T_a=25^\circ\text{C}$)

Static Characteristics

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

Dynamic Characteristics

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

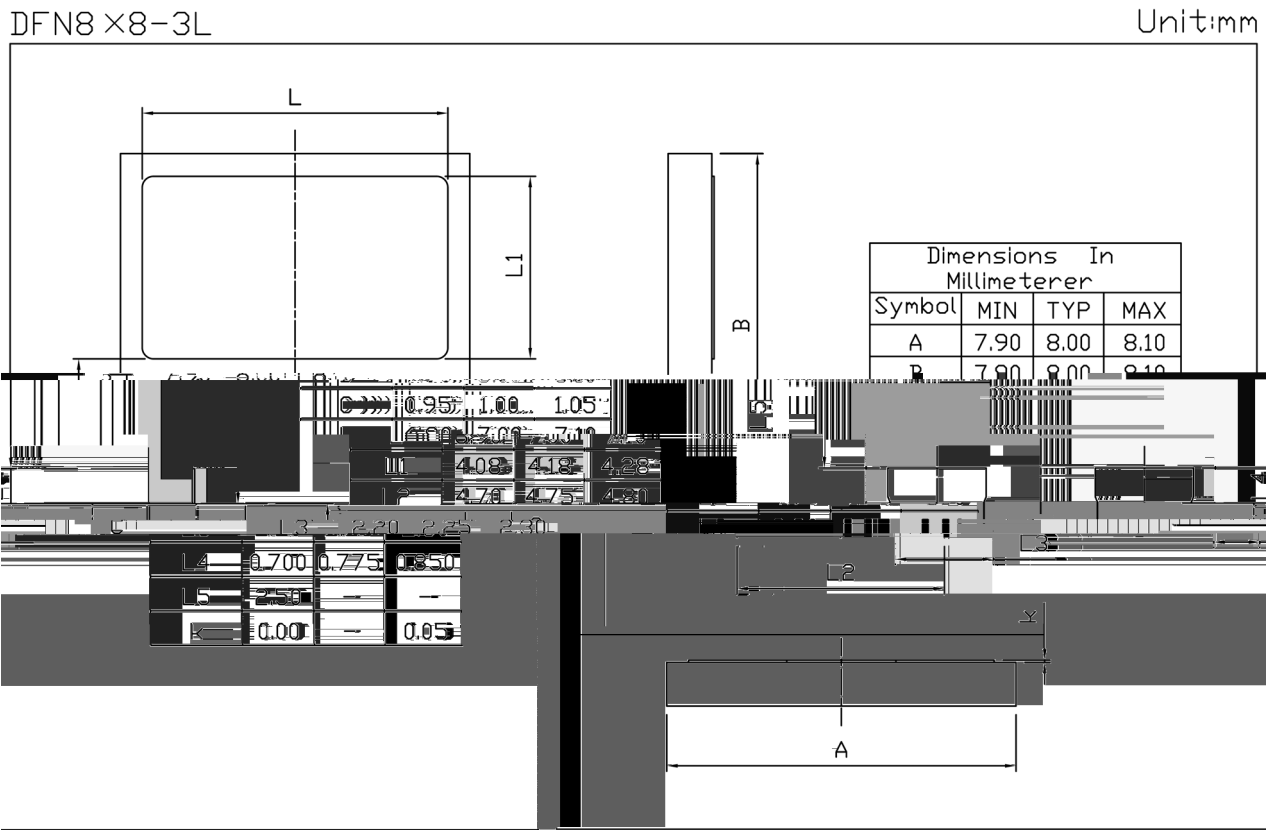
/ Electrical Characteristics(Ta=25)

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

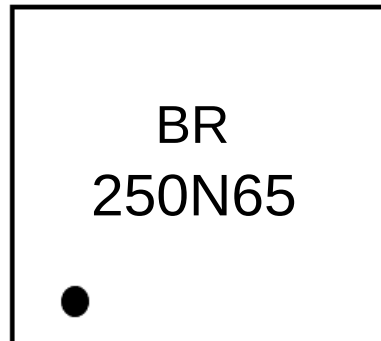
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Voltage	V_{SD}	$I_S=2A$, $V_{GS}=0V$		1.2		V
Pulsed Current, Reverse	I_S	$V_{GS} = 0V$; $T_C=100$ $\leq 25\%$ duty cycle			4.0	A
Reverse Recovery Time	t_{RR}	$I_S=4A$ $V_{DS}=400V$ $di/dt=1000A/us$		15		ns
Reverse Recovery Charge	Q_{RR}			22	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

I Package Dimensions



Rev.00 202111

/ Marking Instructions



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250N65

Note

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Company Code

250N65

Product Type

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Lot No. Code, code change with Lot No

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

Note:

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|---|---------|-----------|---|
| 1 | 150 180 | 60 90sec; | 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. |