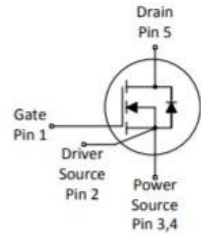


NSJ65R160G

General Features

- 650V,22A
- $R_{DS(ON),max.}=160m\Omega@V_{GS}=10V$
- Super-Junction MOSFET
- Low $R_{DS(ON)}$
- Improved dv/dt Capability
- Intrinsic Fast-Recovery Body Diode
- 100% Avalanche Tested
- RoHS compliant



Schematic diagram

Applications

- Switching Mode Power Supplies (SMPS)
- PWM Motor Controls
- LED Lighting
- Adapter



DFN8*8

Absolute Maximum ratings $T_J = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	650	V
I_D	Continuous Drain Current $TC=25^\circ\text{C}^{(1)}$	22	A
	Continuous Drain Current $TC=100^\circ\text{C}^{(1)}$	14	
I_{DM}	Drain Current – Pulsed ⁽²⁾	66	
V_{GS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy ⁽³⁾	405	mJ
P_D	Power Dissipation	156	W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.8	$^\circ\text{C}/\text{W}$
$R_{\theta ja}$	Thermal resistance, Junction to ambient	40	$^\circ\text{C}/\text{W}$
T_J, T_{stg}	Junction and Storage Temperature Range	-50 to 150	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering purpose	260	$^\circ\text{C}$

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Electrical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{dss}	Drain-source breakdown voltage	$V_{GS}=0V, I_D=250\mu A$	650			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=650V, V_{GS}=0V$			1.0	μA
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA
On Characteristics						
$V_{GS(TH)}$	Gate Threshold voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3.5	4.5	V
$R_{DS(On)}$	Drain-Source on-state resistance (3)	$V_{GS}=10V, I_D=10A$		130	160	m Ω
Dynamic Characteristics						
C_{iss}	Input capacitance	$V_{GS}=0V, V_{DS}=200V$ $f=1.0MHz$		1571		pF
C_{oss}	Output capacitance			51		pF
C_{riss}	Reverse transfer capacitance			3		pF
Switching Characteristics						
$t_{d(on)}$	Turn On Delay Time	$V_{DS}=325V, I_D=22A,$ $R_G=10\Omega, V_{GS}=10V$		25		ns
t_r	Rising Time			52		ns
$t_{d(off)}$	Turn Off Delay Time			43		ns
t_f	Fall Time			42		ns
Q_g	Total Gate Charge	$V_{DS}=520V, V_{GS}=10V,$ $I_D=22A, I_G=3mA$		34		nC
Q_{gs}	Gate-Source Charge			10		nC
Q_{gd}	Gate-Drain Charge			14		nC
Drain-Source Diode Characteristics						
V_{SD}	Drain to Source Diode Forward Voltage	$I_S=22A, V_{GS}=0V$			1.4	V
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current				66	A
I_S	Maximum Continuous Drain to Source Diode Forward Current				22	A
T_{rr}	Reverse recovery time	$I_S=22A, V_{GS}=0V,$ $dI_F/dt=100A/\mu s$		163		ns
Q_{rr}	Reverse recovery Charge			980		nC

Notes

1. Drain current is limited by maximum junction temperature.
2. Repetitive rating : pulse width limited by junction temperature.
3. $L = 40mH, I_{AS} = 4.5A, V_{DD} = 100V, R_G=25\Omega,$ Starting at $T_J = 25^\circ\text{C}$

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Typical Electronic and Thermal Characteristics

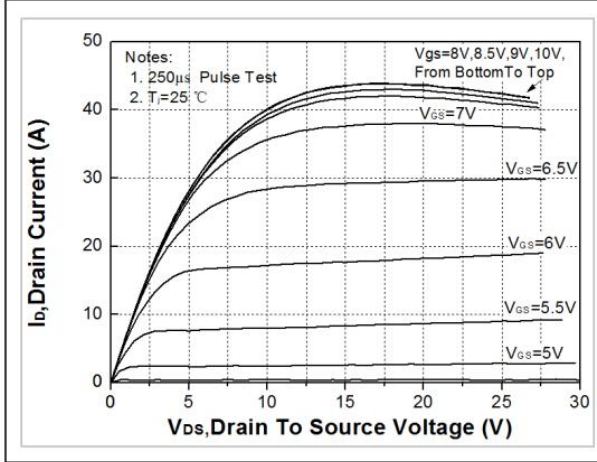


Fig1. Output characteristics

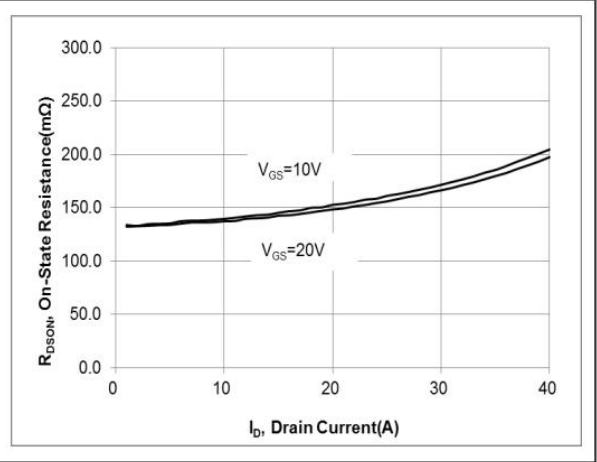


Fig2. Drain-source on-state resistance

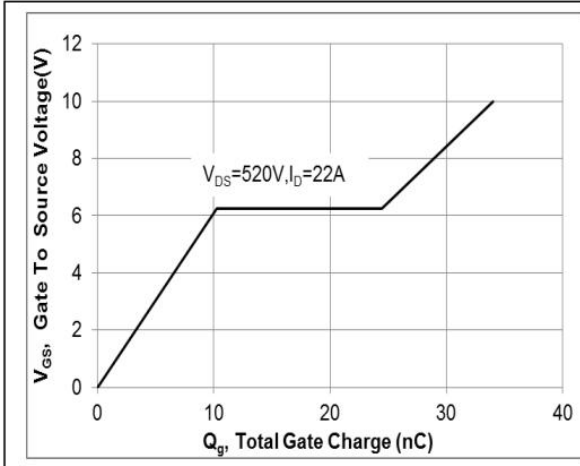


Fig3. Gate charge characteristics

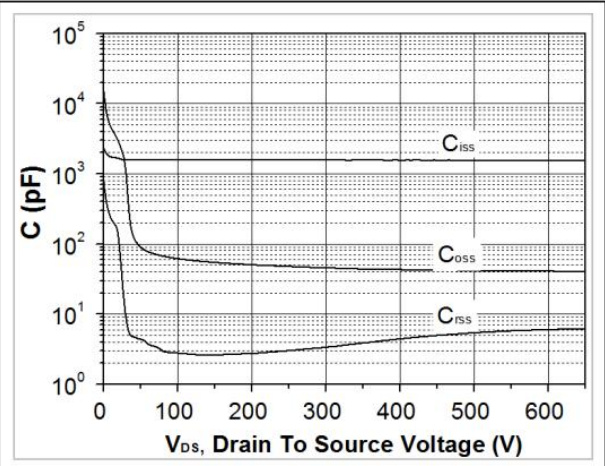


Fig 4. Capacitance Characteristics

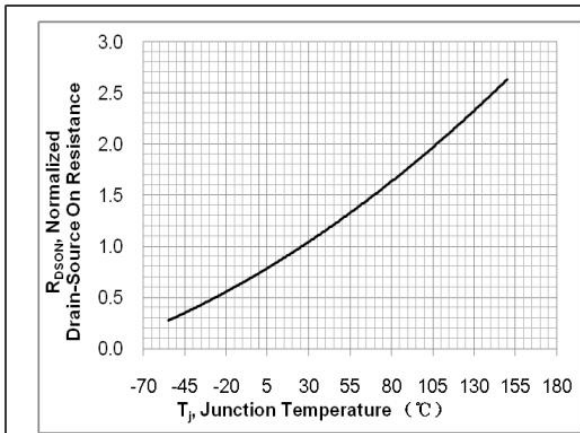


Fig 5. R_{DS(ON)} vs junction temperature

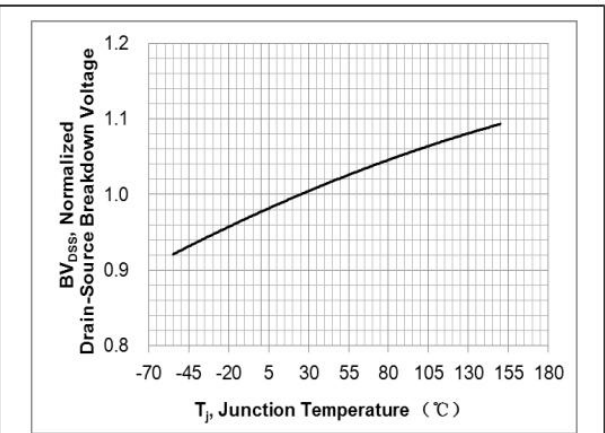


Fig 6. BV_{DSS} vs junction temperature

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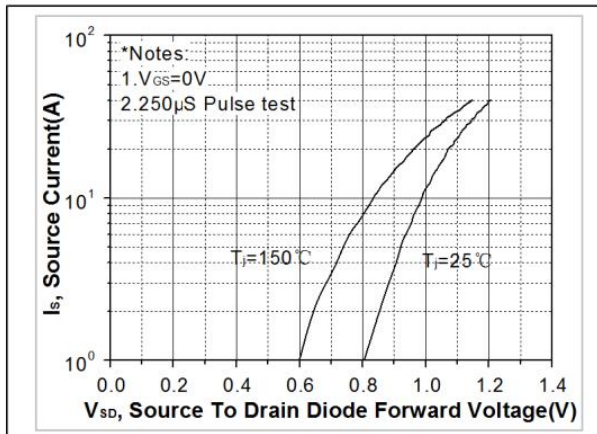


Fig 7. Forward characteristics of reverse diode

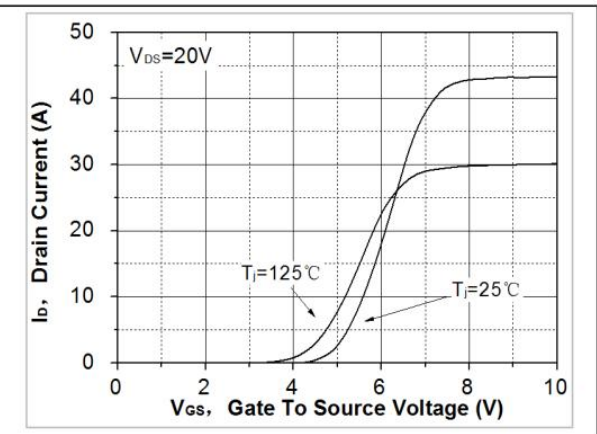


Fig 8. Transfer characteristics

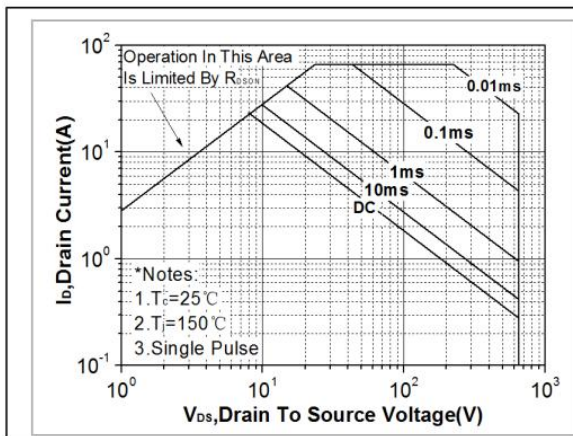


Fig 9. Safe operating area(DFN8*8)

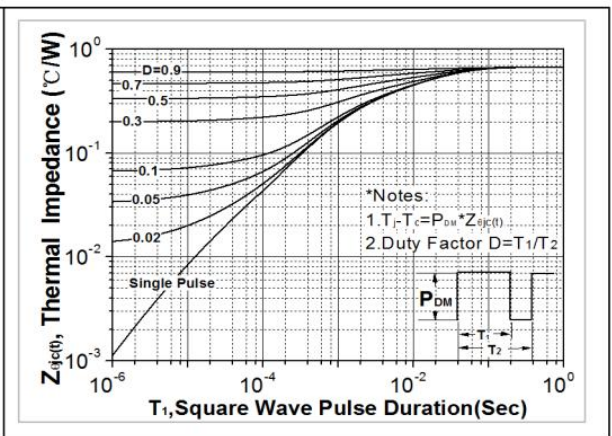


Fig 10. Transient thermal impedance

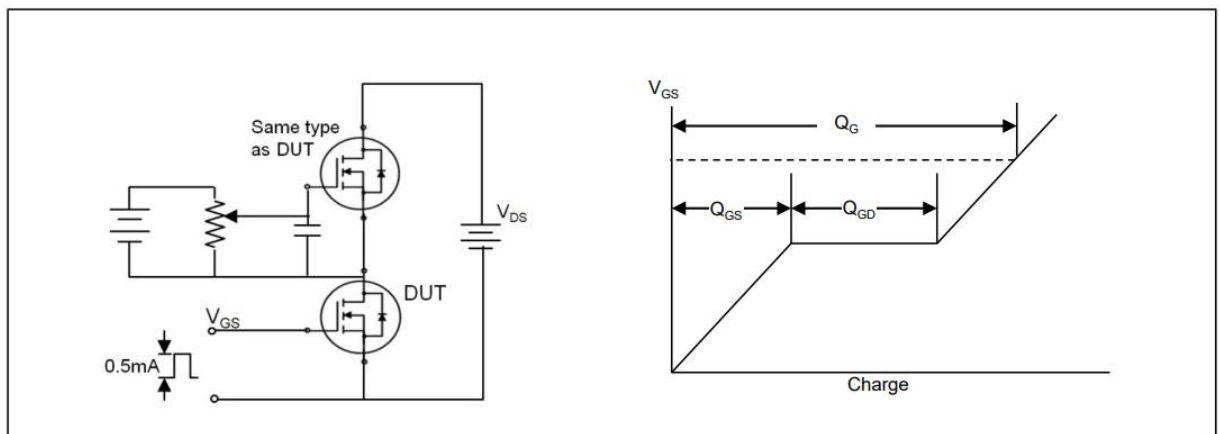


Fig 11. Gate charge test circuit & waveform

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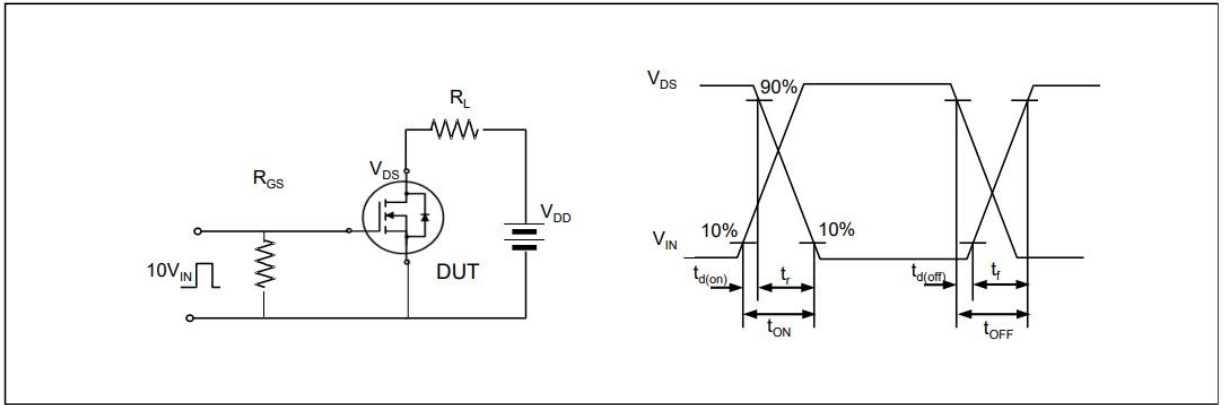


Fig 12. Switching time test circuit & waveform

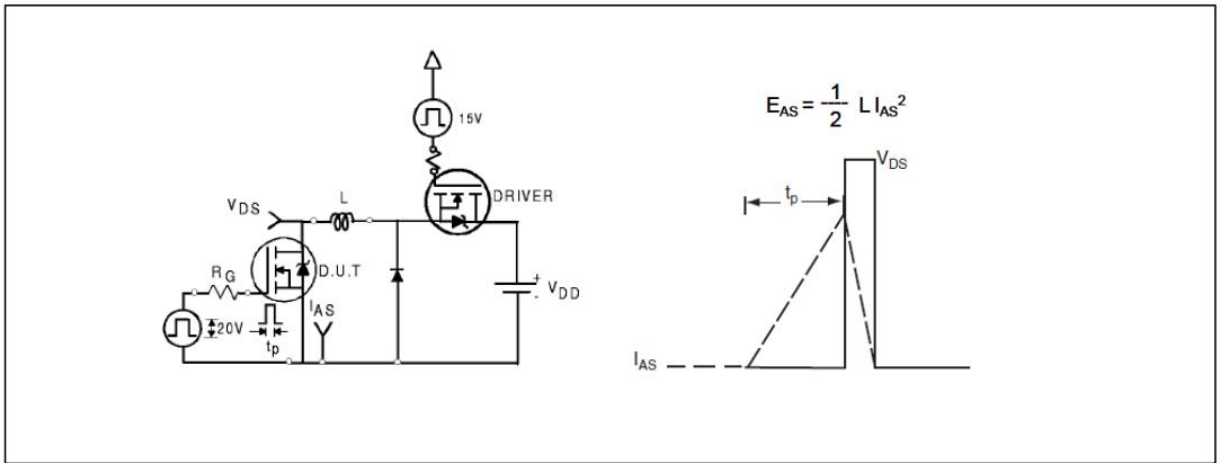


Fig 13. Unclamped Inductive switching test circuit & waveform

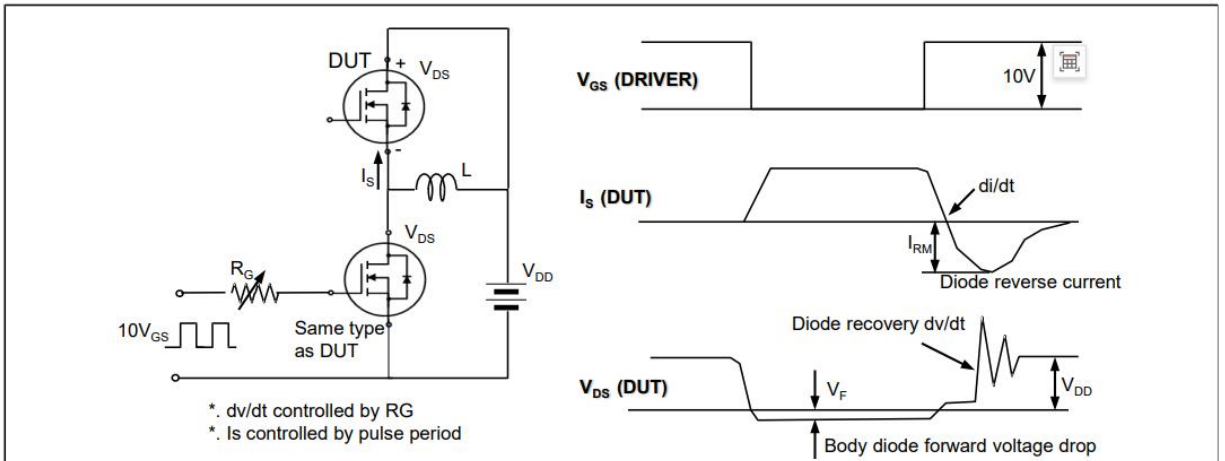


Fig 14. Peak diode recovery dv/dt test circuit & waveform

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Package Outline(DFN8 × 8)

