General Features

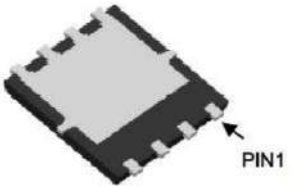
- Low RDS(ON)
- Low Dense Cell Design
- Reliable and Rugged
- Advanced trench process technology

Product Summary

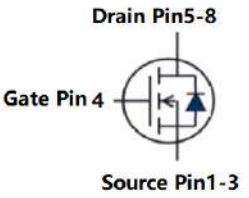
V_{DSS}	30	V
$R_{DS(ON)-Typ}$	3.3	mΩ
I_D	50	A

Application

- Power Management in Inverter System
- Synchronous Rectification



DFN5×6



Maximum ratings, at T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source breakdown voltage		30	V
I_S	Diode continuous forward current	T_C =25°C	50	A
I_D	Continuous drain current @VGS=10V	T_C =25°C	50	A
		T_C =100°C	28	A
I_{DM}	Pulse drain current tested ①	T_C =25°C	180	A
EAS	Avalanche energy, single pulsed ②		250	mJ
P_D	Maximum power dissipation	T_C =25°C	28	W
VGS	Gate-Source voltage		±20	V
T_{STG}, T_J	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	4.5	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	35	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_j=25°C (unless otherwise stated)						
BV_{DSS}	Drain-Source Voltage	V_{GS}=0V, I_D=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_j=125℃)	V_{DS}=30V,V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	1.5	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=10V, I_D=20A	--	3.3	4.5	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=4.5V, I_D=10A	--	5.5	8	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	--	860	--	pF
C_{oss}	Output Capacitance		--	140	--	pF
C_{rss}	Reverse Transfer Capacitance		--	105	--	pF
R_g	Gate Resistance	f=1MHz	--	2.7	--	Ω
Q_g (10V)	Total Gate Charge	V_{DS}=15V,I_D=25A, V_{GS}=10V	--	19	--	nC
Q_g (4.5V)	Total Gate Charge		--	13	--	nC
Q_{gs}	Gate-Source Charge		--	4.3	--	nC
Q_{gd}	Gate-Drain Charge		--	6.5	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V, I_D=25A, R_G=3.0Ω, V_{GS}=10V	--	6	--	ns
t_r	Turn-on Rise Time		--	5	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	25	--	ns
t_f	Turn-Off Fall Time		--	7	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=25A,V_{GS}=0V	--	0.9	1.2	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=25A, V_{GS}=0V di/dt=500A/μs	--	7	--	ns
Q_{rr}	Reverse Recovery Charge		--	6.3	--	nC

NOTE:

① Repetitive rating; pulse width limited by max junction temperature.

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH, R_G = 25Ω, I_{AS} = 9A, V_{GS} =10V. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Characteristics

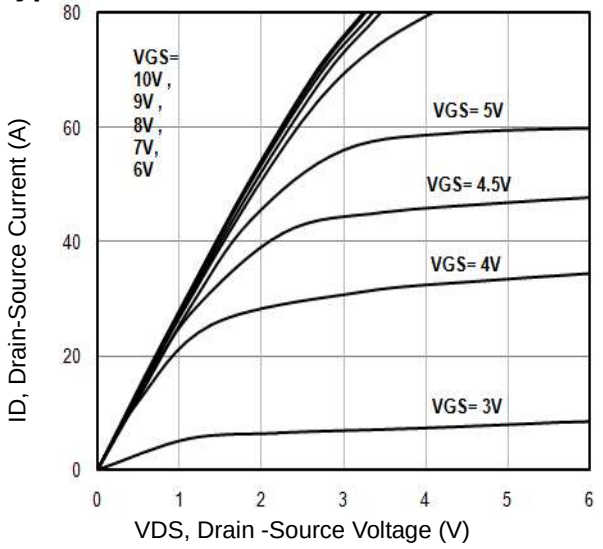


Fig1. Typical Output Characteristics

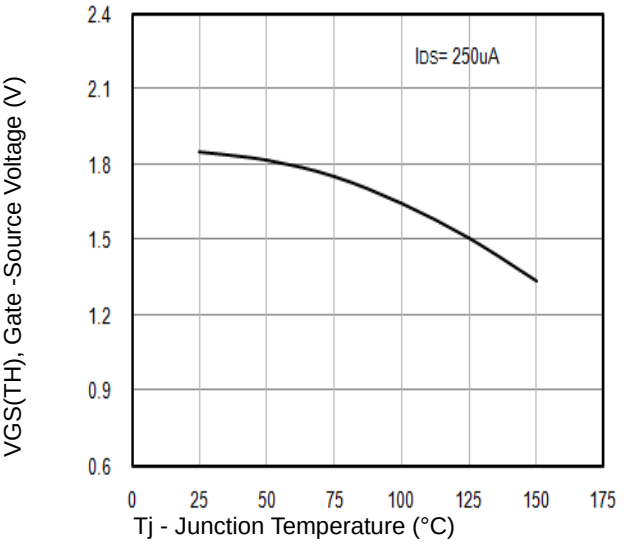


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs.Tj

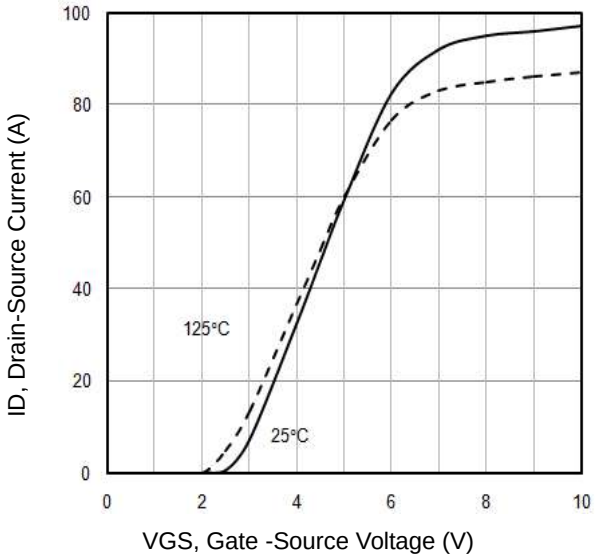


Fig3. Typical Transfer Characteristics

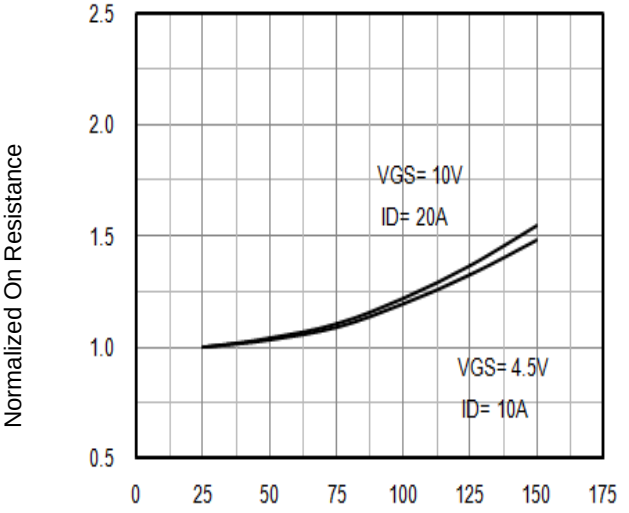


Fig4. Normalized On-Resistance Vs. Tj

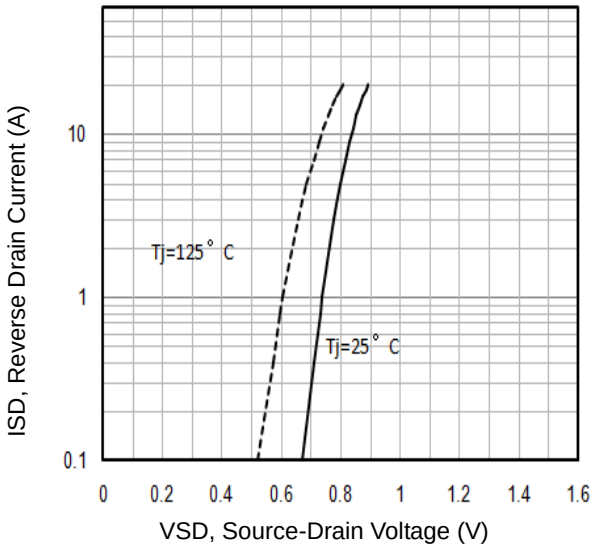


Fig5. Typical Source-Drain Diode Forward Voltage

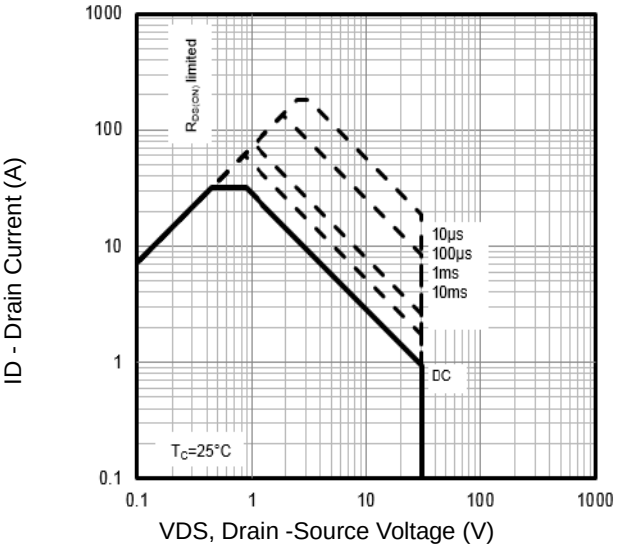


Fig6. Maximum Safe Operating Area

Typical Characteristics

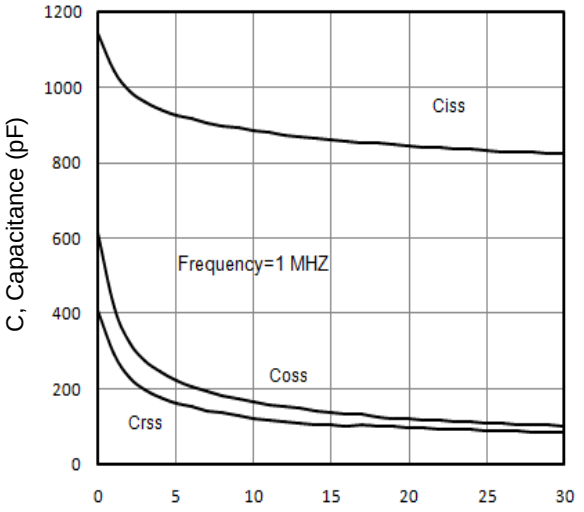


Fig7. Typical Capacitance Vs.Drain-Source Voltage

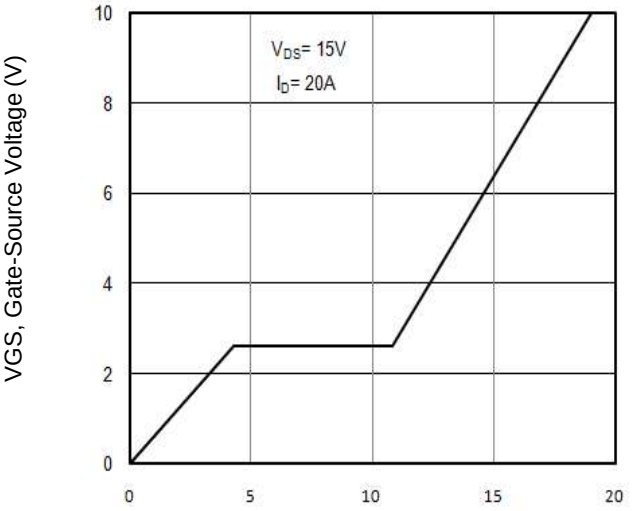


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

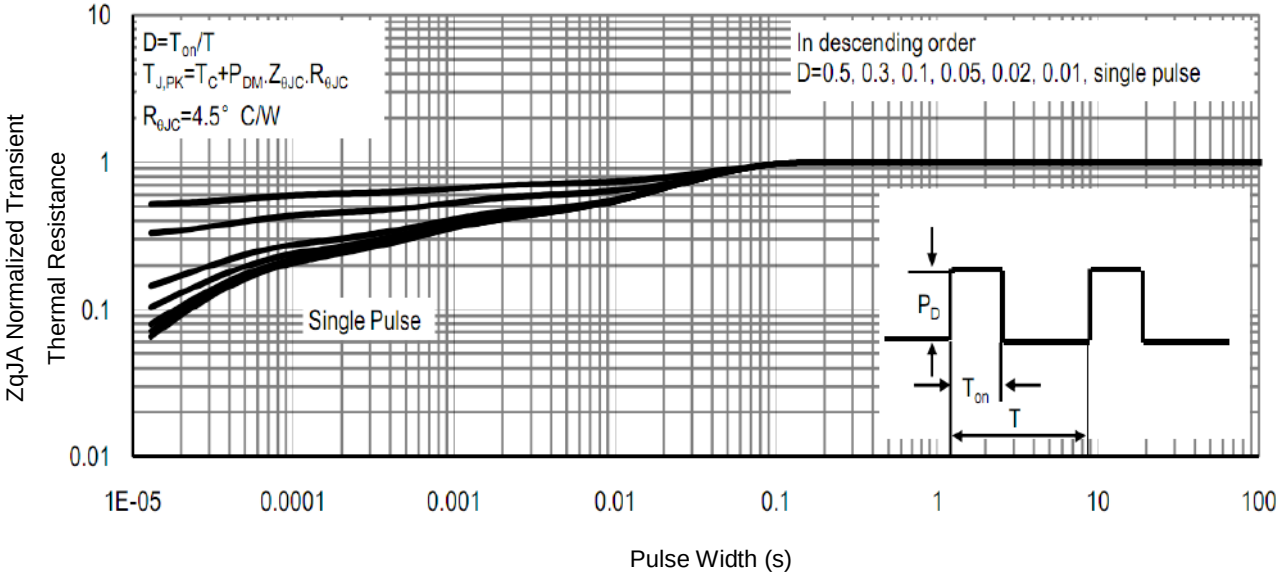


Fig9. Normalized Maximum Transient Thermal Impedance

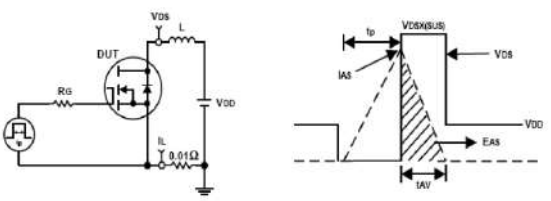


Fig10. Unclamped Inductive Test Circuit and waveforms

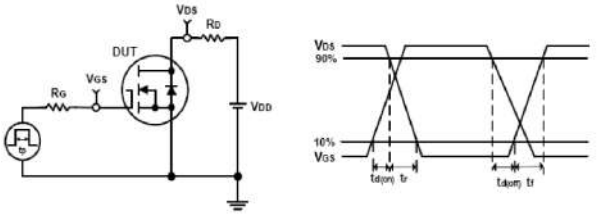
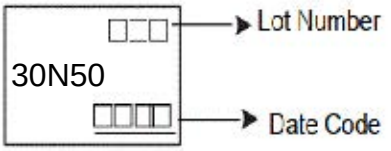


Fig11. Switching Time Test Circuit and waveforms

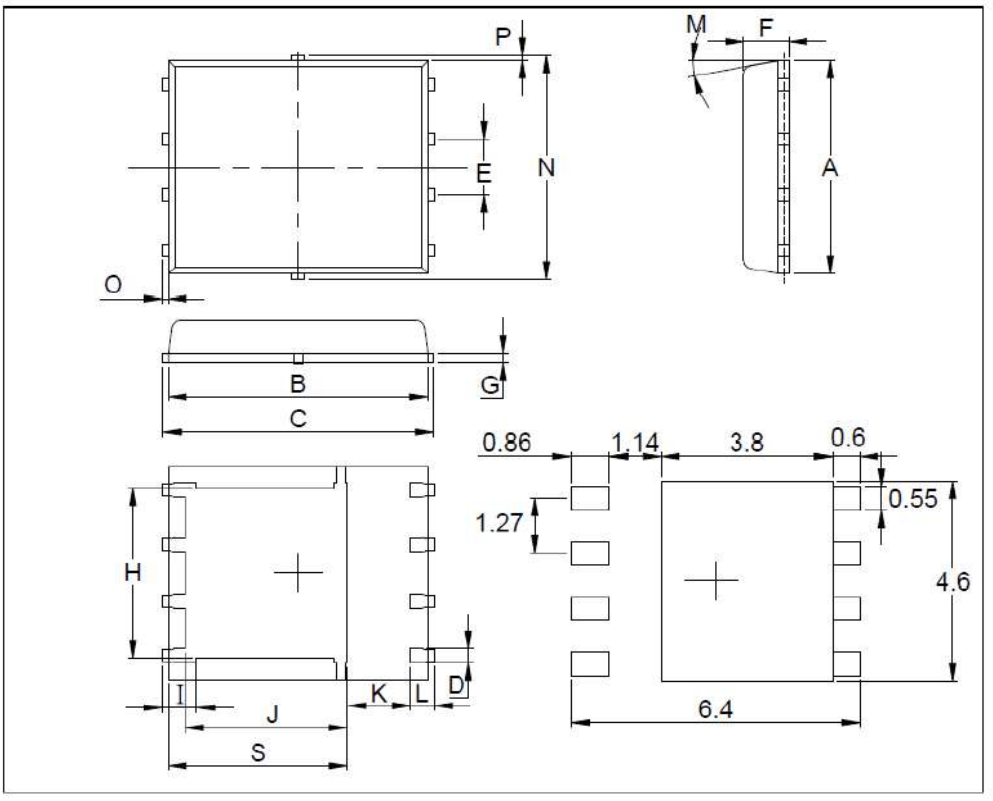
Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
JMN30N50Q-R	30N50	DFN5x6-8	Tape&Reel	5000

PACKAGE	MARKING
DFN5*6-8	

PDFN 5x6P MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8		5.15	J	3.33		3.78
B	5.44		5.9	K	0.9		
C	5.9		6.35	L	0.35		0.712
D	0.33		0.51	M	0°		12°
E		1.27		N	4.8		5.5
F	0.8		1.25	O	0.05		0.3
G	0.15		0.34	P	0.06		0.2
H	3.61		4.31	S	3.69		4.19
I	0.35		0.71				



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