SFP(B)130N100

N-MOSFET 100V, 130A, 6.6mΩ

Features

- N-Channel，10V Logic Level Control
- Enhancement mode
- Very low on-resistance $R_{DS(on)}$ @ V_{GS}=10V
- 100% Avalanche test
- Pb-free lead plating; RoHS compliant

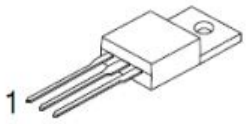
Product Summary

V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10V	6.6	mΩ
I_D	130	A

Applications

- Switching application
- Power Management for Inverter Systems.

Part ID	Package Type	Marking
SFP130N100	TO-220	130N100
SFB130N100	TO-263	130N100



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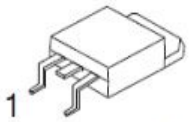

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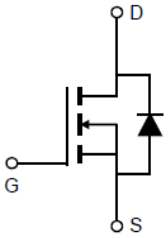


Maximum ratings, at T_j=25 °C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		100	V
I_S	Diode continuous forward current	T_C=25°C	130	A
I_D	Continuous drain current @V_{GS}=10V	T_C=25°C	130	A
		T_C=100°C	80	A
I_{DM}	Pulse drain current tested ①	T_C=25°C	508	A
EAS	Avalanche energy, single pulsed ②		272	mJ
P_D	Maximum power dissipation	T_C=25°C	216	W
V_{GS}	Gate-Source voltage		±25	V
T_{STG} T_J	Storage and operating temperature range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.58	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	°C/W

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @T_j= 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_j=125℃)	V_{DS}=100V,V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±25V,V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	2.0	2.9	4.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=10V, I_D=80A	--	6.6	8.5	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=30V,V_{GS}=0V, f=1MHz	--	4090	--	pF
C_{oss}	Output Capacitance		--	470	--	pF
C_{rss}	Reverse Transfer Capacitance		--	310	--	pF
R_g	Gate Resistance	f=1MHz	--	3.2	--	Ω
Q_g	Total Gate Charge	V_{DS}=50V,I_D=80A, V_{GS}=10V	--	69	--	nC
Q_{gs}	Gate-Source Charge		--	23	--	nC
Q_{gd}	Gate-Drain Charge		--	22	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V, I_D=80A, R_G=3Ω, V_{GS}=10V	--	28	--	nS
t_r	Turn-on Rise Time		--	20	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	50	--	nS
t_f	Turn-Off Fall Time		--	23	--	nS
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=80A,V_{GS}=0V	--	0.9	1.2	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=80A, V_{GS}=0V di/dt=500A/μs	--	28	--	nS
Q_{rr}	Reverse Recovery Charge			110		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} = 33A,V_{GS} =10V. Part not recommended for use above this value

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

Typical Characteristics

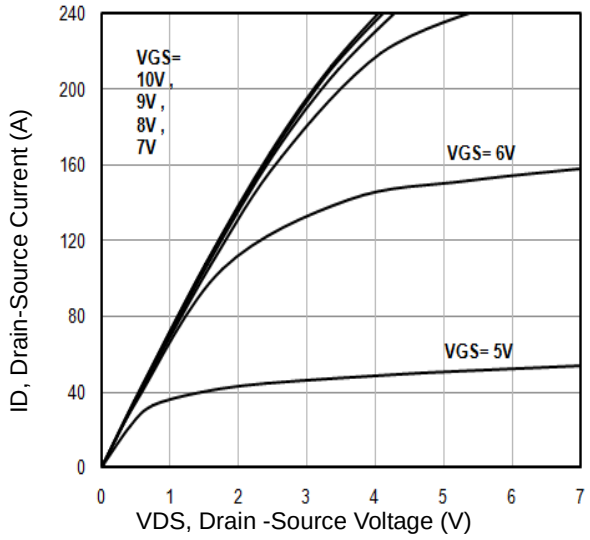


Fig1. Typical Output Characteristics

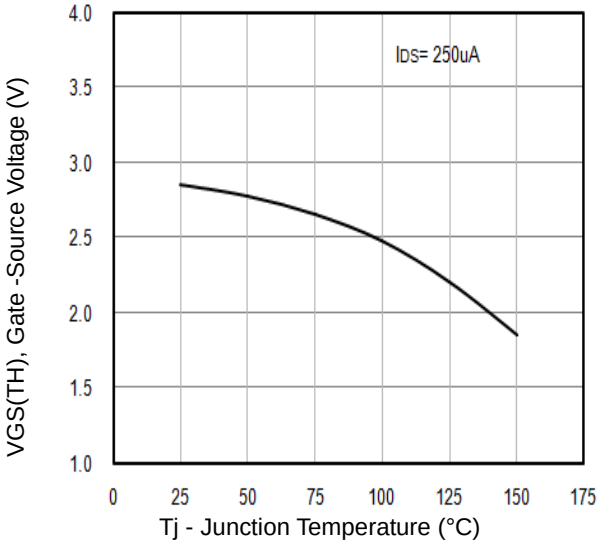


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs. Tj

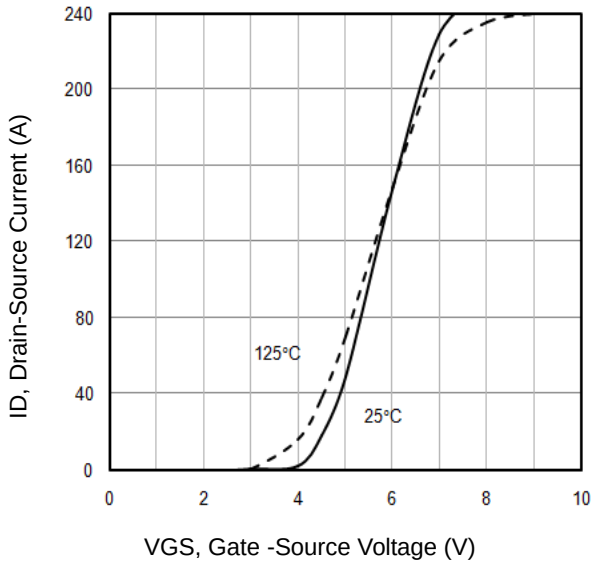


Fig3. Typical Transfer Characteristics

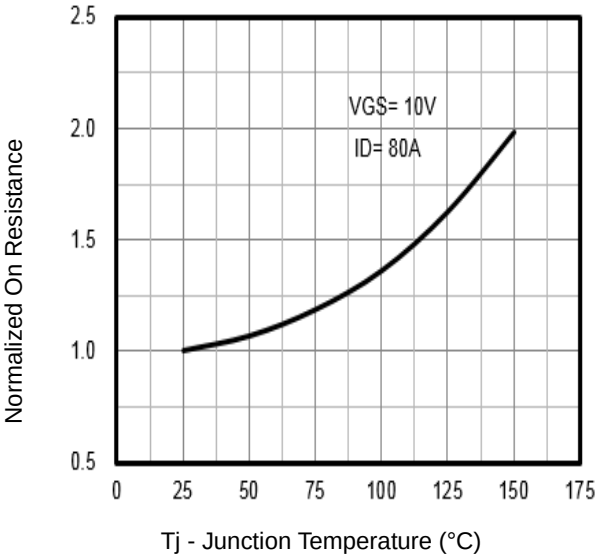


Fig4. Normalized On-Resistance Vs. Temperature

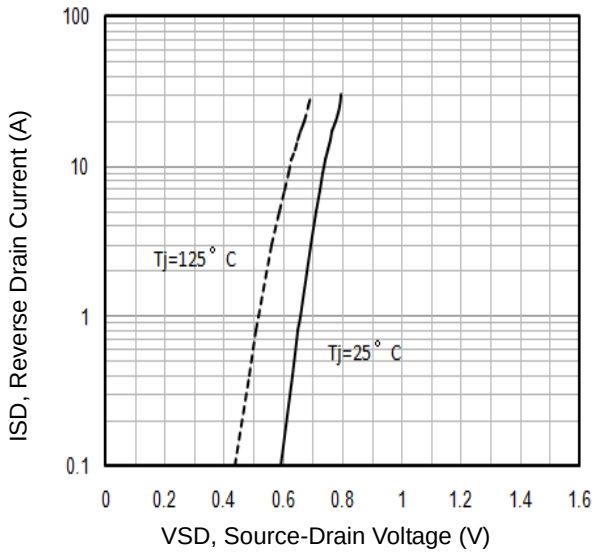


Fig5. Typical Source-Drain Diode Forward Voltage

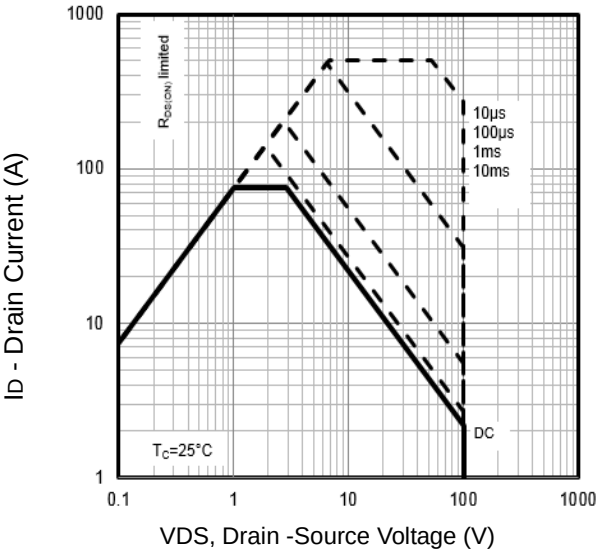


Fig6. Maximum Safe Operating Area

Typical Characteristics

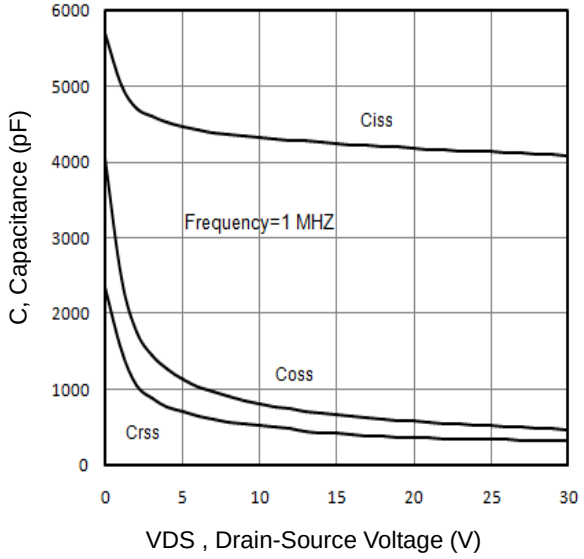


Fig7. Typical Capacitance Vs.Drain-Source Voltage

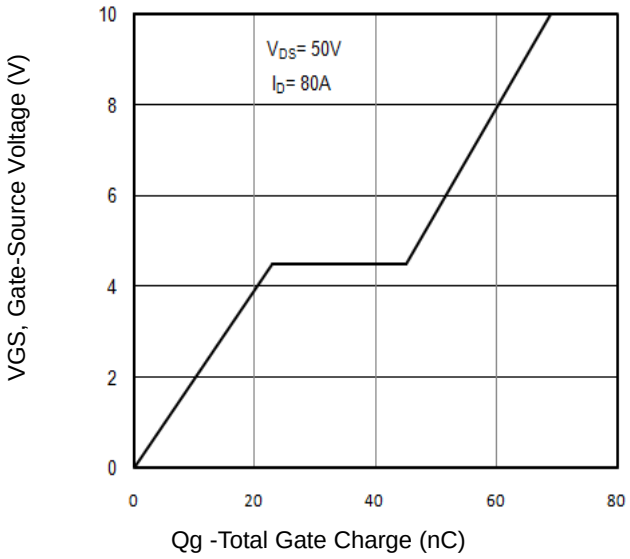


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

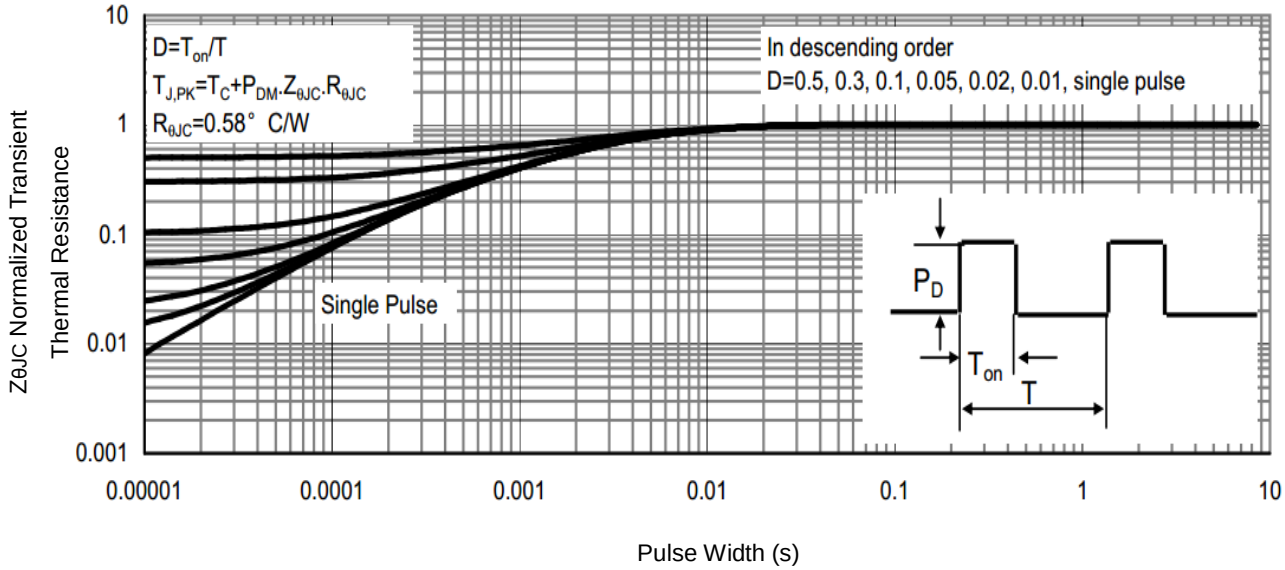


Fig9. Normalized Maximum Transient Thermal Impedance

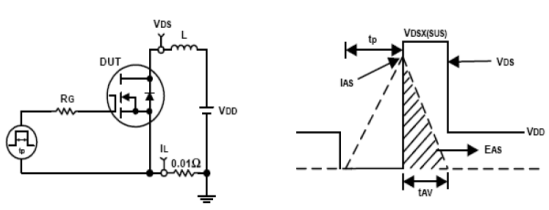


Fig10. Unclamped Inductive Test Circuit and waveforms

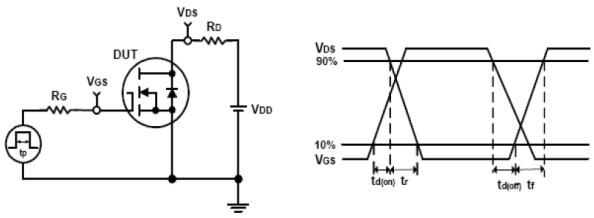
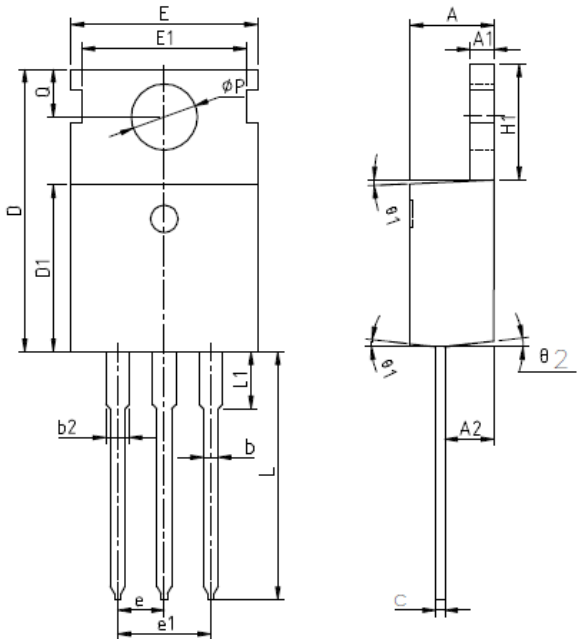


Fig11. Switching Time Test Circuit and waveforms

PACKAGE DIMENSION

TO-220



SYMBOL	MIN	NOM	MAX
A	4.27	4.57	4.87
A1	1.15	1.30	1.45
A2	2.10	2.40	2.70
b	0.70	0.80	1.00
b2	1.17	1.27	1.50
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.70	6.70	7.00
E	9.70	10.00	10.30
E1	-	8.70	-
E2	9.65	10.00	10.35
E3	7.00	8.00	8.40
e		2.54 BSC	
e1		5.08 BSC	
H1	6.00	6.50	6.85
L	12.75	13.50	13.90
L1	-	3.10	3.40
ΦP	3.45	3.60	3.75
Q	2.60	2.80	3.00
θ1	4°	7°	10°
θ2	0°	3°	6°

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