

Features

- Enhancement mode
- Very low on-resistance
- Fast Switching
- 100% Avalanche test
- Pb-free lead plating; RoHS compliant

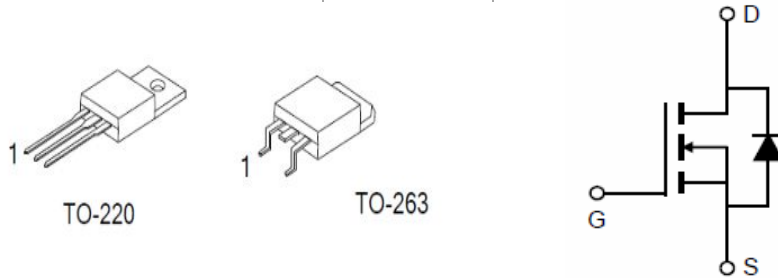
Product Summary

V _{DS}	150V
R _{DS(on)} @V _{GS} =12V	11 mΩ
I _D	100A

Application

- Automotive applications and a wide variety of other applications
- High Efficiency Synchronous in SMPS
- High Speed Power Switching

Part ID	Package Type	Marking
SFP100N150	TO-220	100N150
SFB100N150	TO-263	100N150



Maximum ratings, at $T_J=25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter		Rating	Unit
Common Ratings (Tc=25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage		±25	V
V _{(BR)DSS}	Drain-Source Breakdown Voltage		150	V
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	100	A
Mounted on Large Heat Sink				
I _D	Continuous Drain current@VGS=10V	T _C =25°C	100	A
		T _C =100°C	65	A
I _{DM}	Pulse Drain Current Tested ①	T _C =25°C	300	A
P _D	Maximum Power Dissipation	T _C =25°C	230	W
R _{θJC}	Thermal Resistance-Junction to Case		0.65	°C/W
R _{θJA}	Thermal Resistance Junction-Ambient		52.5	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed ②		225	mJ

SFP(B)100N150

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T _c = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	150	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(T _c =25°C)	V _{DS} =150V,V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T _c =125°C)	V _{DS} =150V,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	3.0	4.0	5.0	V
R _{DS(ON)}	Drain-Source On-State Resistance③	V _{GS} =12V, I _D =30A	--	11.0	12.5	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance③	V _{GS} =10V, I _D =30A	--	11.2	13.0	mΩ
Dynamic Electrical Characteristics @ T _c = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =20V,V _{GS} =0V, f=1MHz	--	5960	--	pF
C _{oss}	Output Capacitance		--	485	--	pF
C _{rss}	Reverse Transfer Capacitance		--	125	--	pF
Q _g	Total Gate Charge	V _{DS} =75V,I _D =20A, V _{GS} =10V	--	75	--	nC
Q _{gs}	Gate-Source Charge		--	26	--	nC
Q _{gd}	Gate-Drain Charge		--	20	--	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =75V, I _D =10A, R _G =6.8Ω, V _{GS} =10V	--	22	--	nS
t _r	Turn-on Rise Time		--	28	--	nS
t _{d(off)}	Turn-Off Delay Time		--	35	--	nS
t _f	Turn-Off Fall Time		--	12	--	nS
Source- Drain Diode Characteristics@ T _c = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	I _{SD} =30A,V _{GS} =0V	--	0.80	1.2	V
t _{rr}	Reverse Recovery Time	T _j =25°C ,I _{sd} =20A, V _{GS} =0V	--	50	--	nS
Q _{rr}	Reverse Recovery Charge	di/dt=300A/μs		105		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} = 30A, V_{GS} = 10V. Part not recommended for use above this value
- ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

SFP(B)100N150

Typical Characteristics

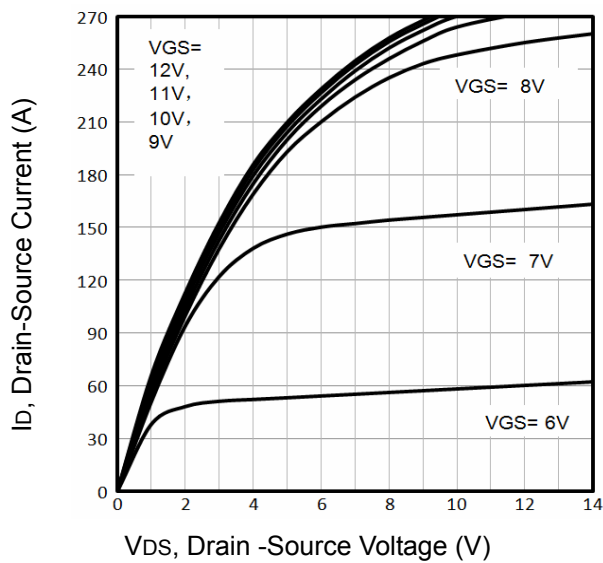


Fig1. Typical Output Characteristics

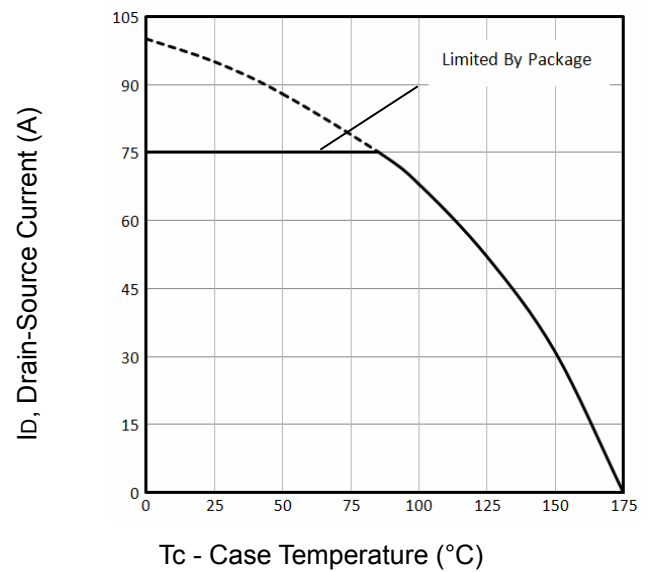


Fig2. Maximum Drain Current Vs Case Temperature

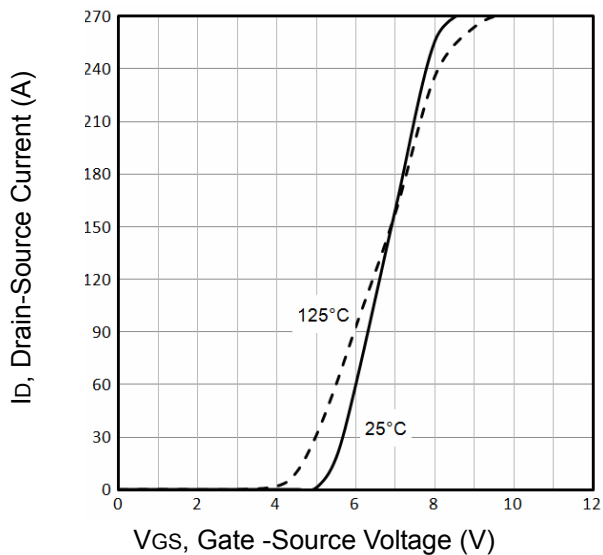


Fig3. Typical Transfer Characteristics

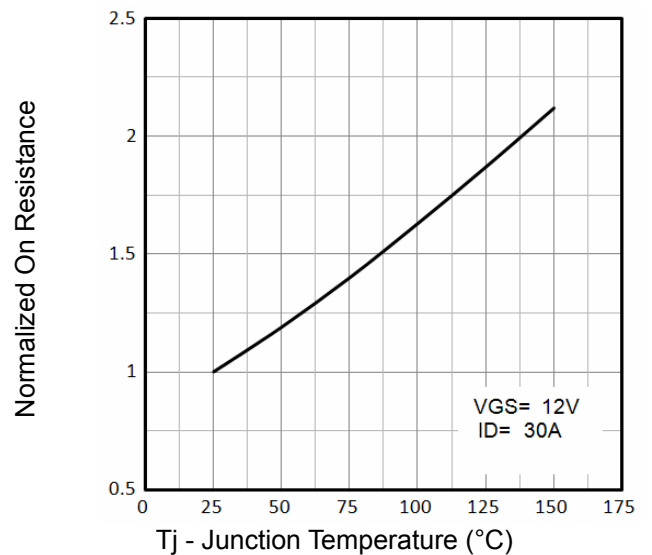


Fig4. Normalized On-Resistance Vs. Temperature

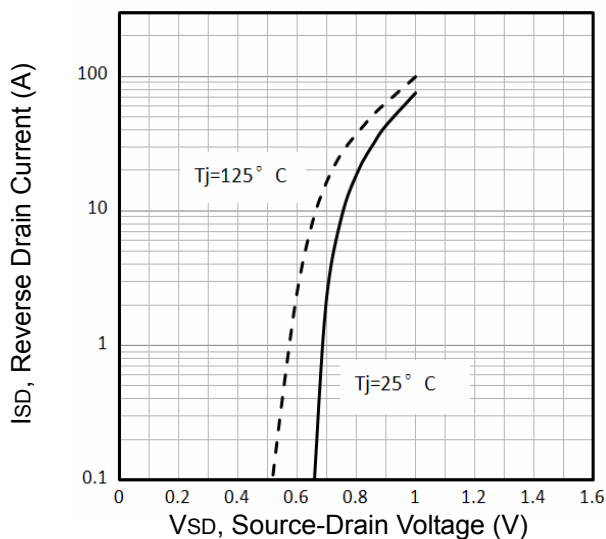


Fig5. Typical Source-Drain Diode Forward Voltage

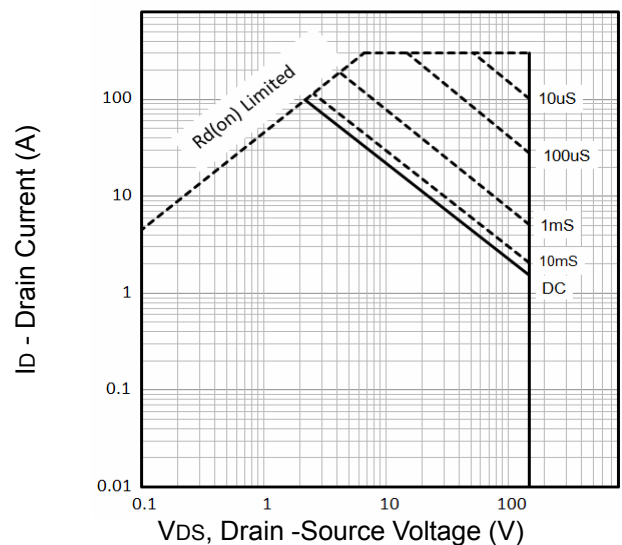


Fig6. Maximum Safe Operating Area

SFP(B)100N150

Typical Characteristics

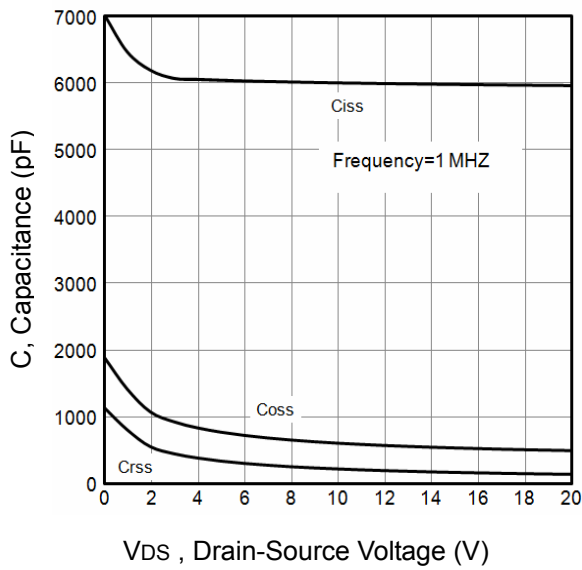


Fig7. Typical Capacitance Vs. Drain-Source Voltage

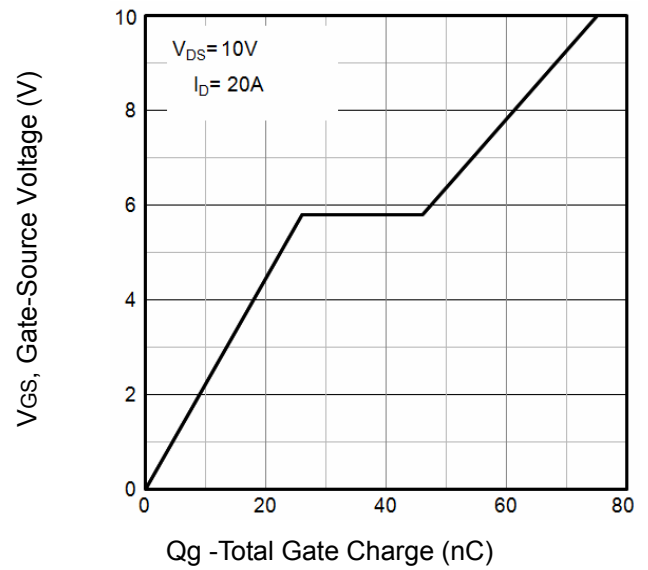


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

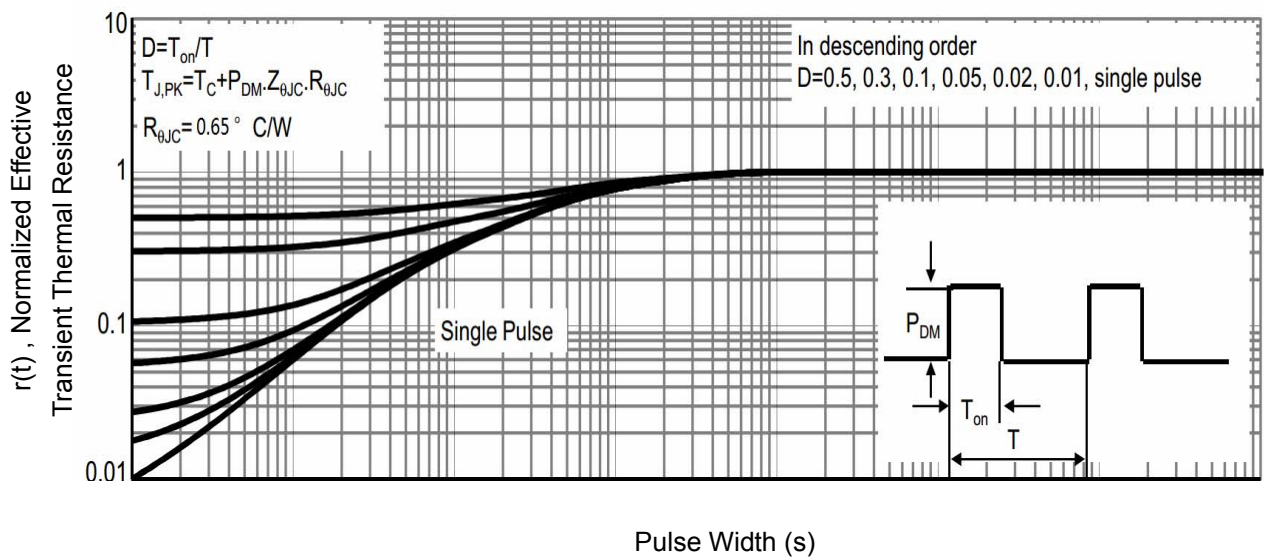


Fig9. Normalized Maximum Transient Thermal Impedance

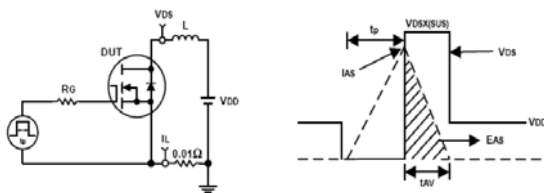


Fig10. Unclamped Inductive Test Circuit and waveforms

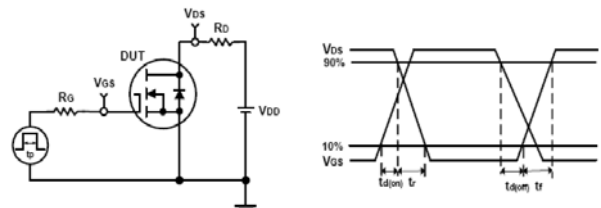
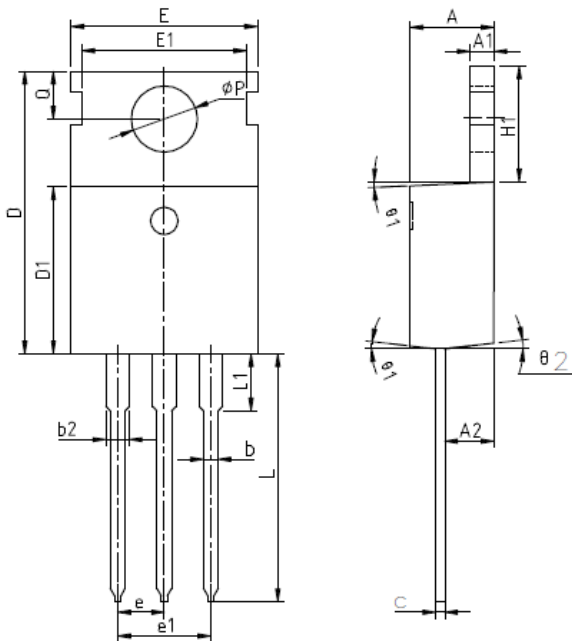


Fig11. Switching Time Test Circuit and waveforms

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
$\theta 1$	4°	7°	10°
$\theta 2$	0°	3°	6°

TO-263

