$30V_{DS}/\pm20V_{GS}$ N-Channel MOSFET

General Description

These N-Channel enhancement mode power field effect transistors are using SGT technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

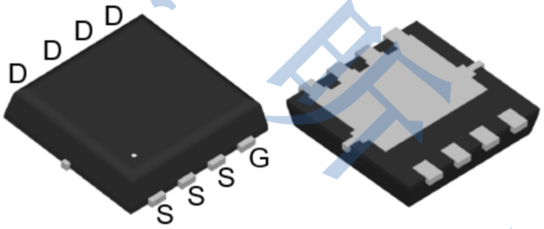
Features

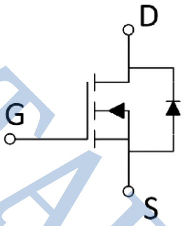
BVDSS	**30V**
$R_{DS(ON)}$(10V)	**4.5mΩ （TYP)**
$R_{DS(ON)}$(4.5V)	**7.0mΩ （TYP)**
I_D	**55A**

100% UIS TESTED!

100% ∆Vds TESTED!

PDFN3030





Absolute maximum ratings （T_A=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current (T_C=25℃)	55	A
	Continuous Drain Current (T_C=100℃)	35	A
I_{DM}	Pulesd Drain Current	140	A
I_{AS}	Avalanche Current (L=0.1mH)	27	A
E_{AS}	Single Pulsed Avalanche Energy	36	mJ
P_D	Maximum Power Dissipation (T_C =25℃)	27.5	W
	Maximum Power Dissipation (T_C =100℃)	11.1	W
T_J,T_{STG}	Operating,Storage Temperature Range	-55~150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	4.5	---	℃/ W
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient	63	---	℃/ W

Electrical Characteristics(T_J=25℃,unless otherwise noted)

Static State Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
B_{VDSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V	---	---	1	μA
I_{GSS}	Gate -Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS},I_D=250μA	1.2	1.6	2.0	V
$R_{DS(ON)}$	Drain-Source On-stage Resistance	V_{GS}=10V,I_D=10A	---	4.5	5.5	mΩ
		V_{GS}=4.5V,I_D=10A	---	7.0	9.5	

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
C_{iss}	Input capacitance	V_{DS}=15V V_{GS}=0V f=1MHz	---	738	---	pF
C_{oss}	Output capacitance		---	187	---	
C_{rss}	Reverse transfer capacitance		---	18	---	
R_g	Gate Resistance	f=1MHz	---	4.3	---	Ω
Q_g	Total Gate Charge	V_{DS}=15V V_{GS}=10V I_D=10A	---	11	---	nC
Q_{gs}	Gate Source Charge		---	2.6	---	
Q_{gd}	Gate Drain Charge		---	1.5	---	
$t_{d(on)}$	Turn-on delay Time	V_{DS}=15V V_{GS}=10V R_G=3Ω I_D=10A	---	5.7	---	ns
t_r	Rise time		---	3.2	---	
$t_{d(off)}$	Turn-off delay Time		---	17.5	---	
t_f	Fall time		---	4.5	---	
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_{SD}=10A	---	0.7	1.2	V
t_{rr}	Reverse Recovery Time	I_D=10A d_i/d_t=100A/μs	---	13	---	ns
Q_{rr}	Reverse Recovery Charge		---	19	---	nC

Note:

1.Repetitive Rating : Pulsed width limited by maximum junction temperature.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.

3.Essentially independent of operating temperature.

Electrical Characteristics Diagrams

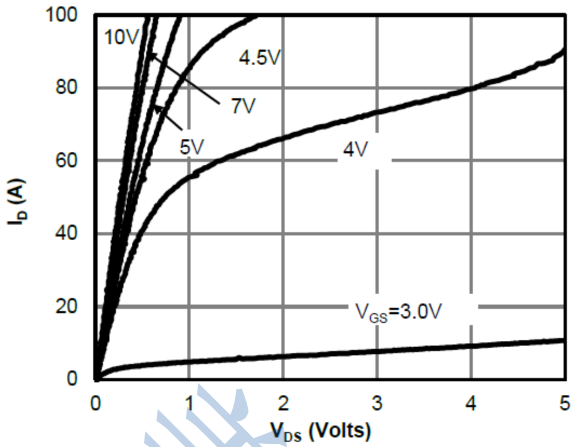


Figure 1. On-Region Characteristics

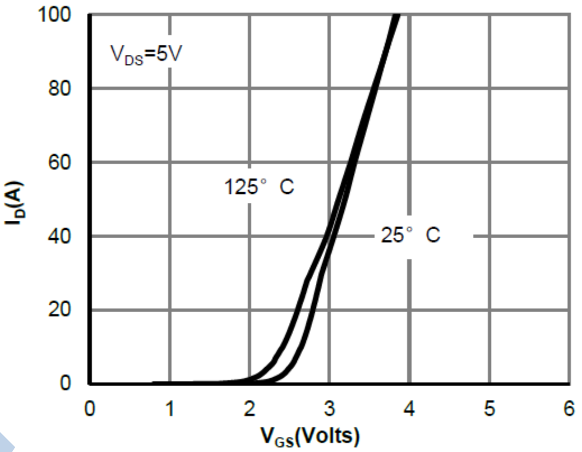


Figure 2. Transfer Characteristics

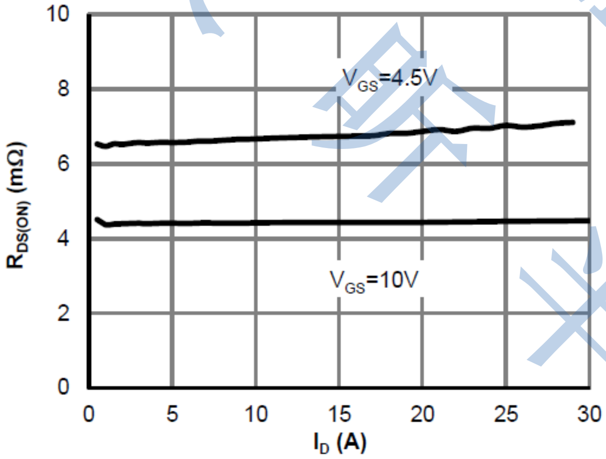


Figure 3. R_{DSON} vs. I_D and Gate Voltage

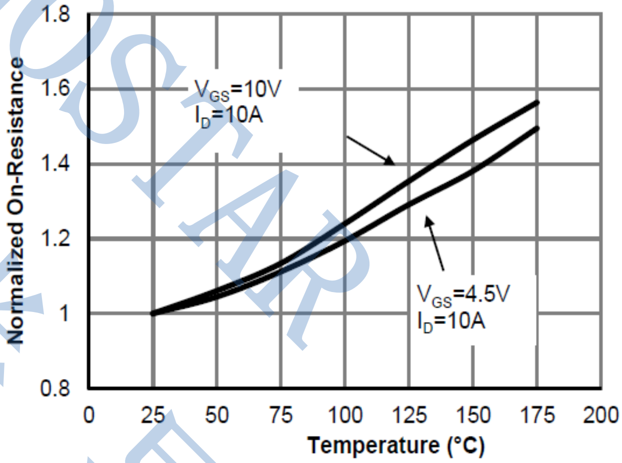


Figure 4. R_{DSON} vs. Junction Temperature

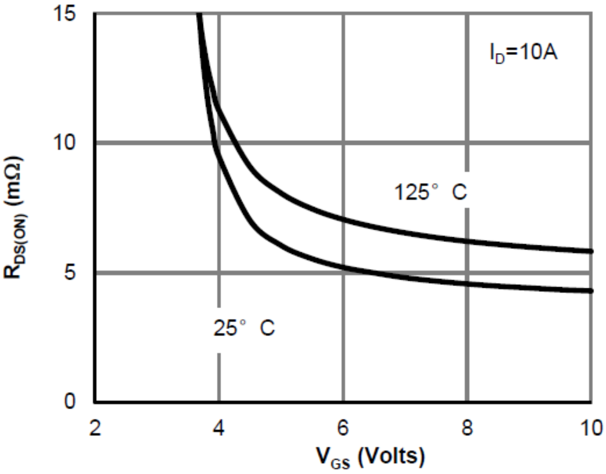


Figure 5. R_{DSON} vs. Gate Voltage

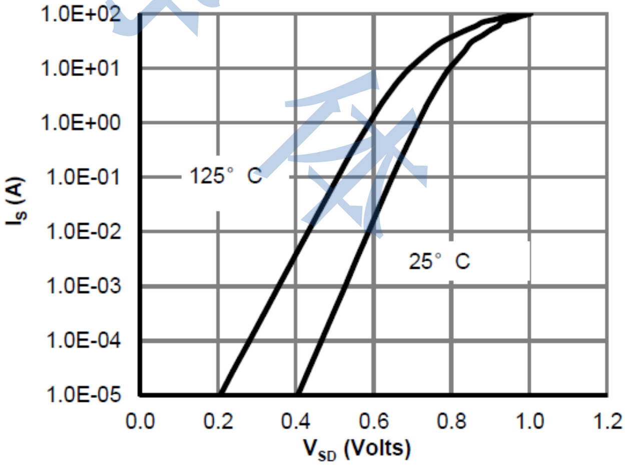


Figure 6. Body-Diode Characteristics

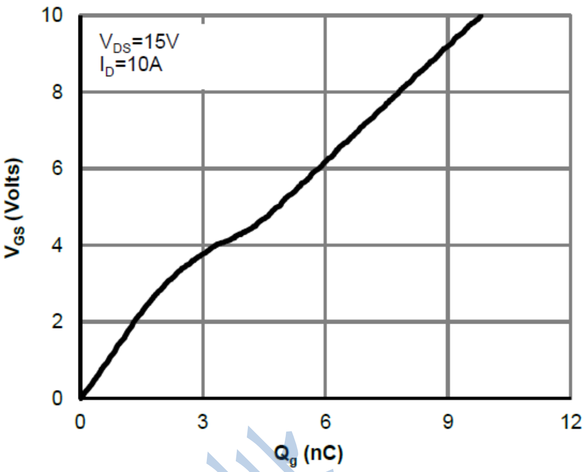


Figure 7. Gate-Charge Characteristics

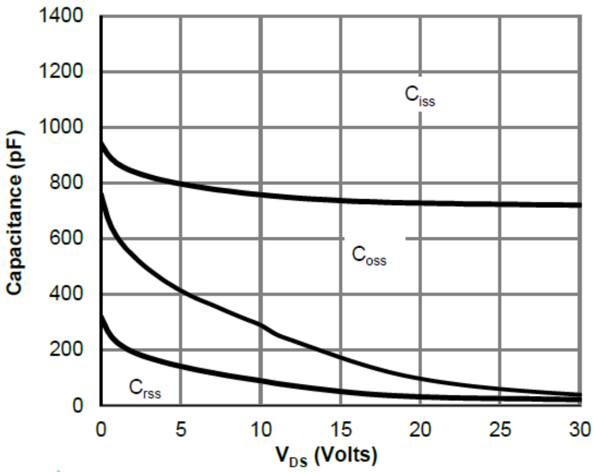


Figure 8. Capacitance Characteristics

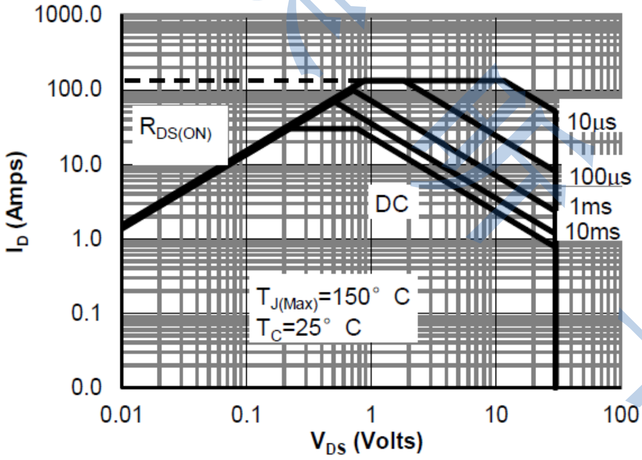


Figure 9. Safe Operating Area

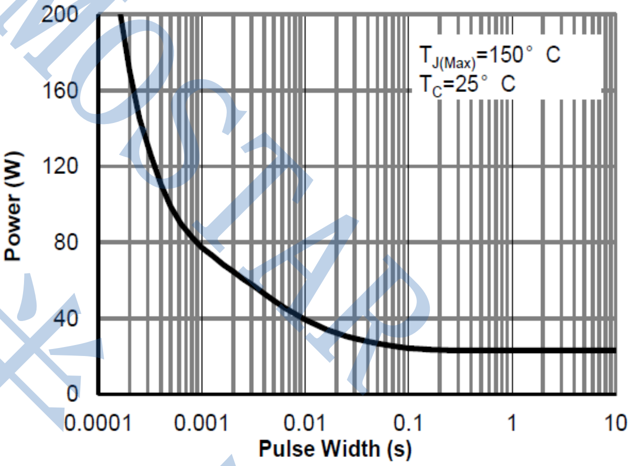
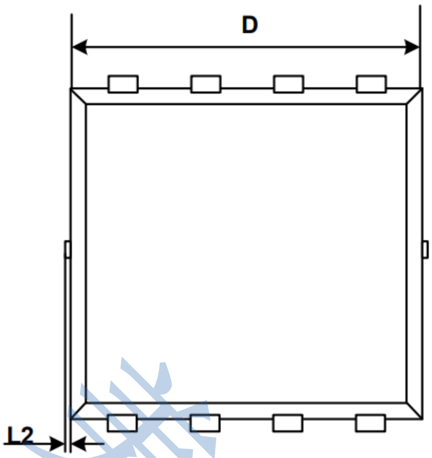
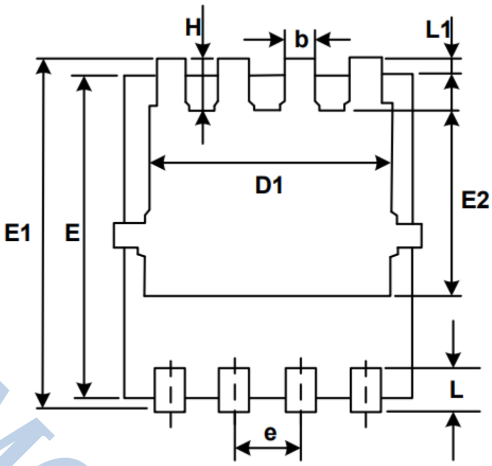
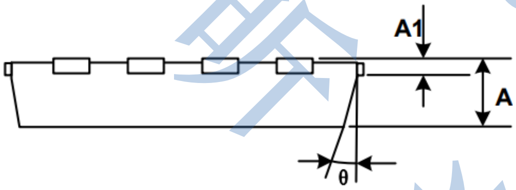


Figure 10. Single Pulse Power Rating Junction-to-Ambient

PDFN3030 PACKAGE INFORMATION







Symbol	Dimensions In Millimeters(mm)	
	MIN	**MAX**
A	0.65	0.90
A1	0.10	0.25
D	2.90	3.25
D1	2.25	2.69
E	2.90	3.20
E1	3.00	3.60
E2	1.35	2.20
b	0.20	0.40
e	0.65BSC	
L	0.15	0.50
L1	0.13BSC	
L2	0.00	0.20
H	0.15	0.65
θ	0°	14°