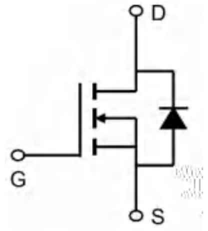
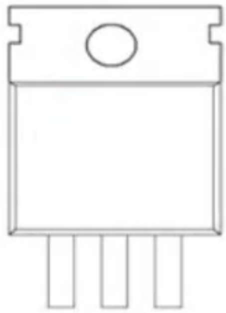
100N03

30V N-Channel Enhancement Mode MOSFET

Description



The 100N03 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

V_{DS} = 30V I_D =100 A

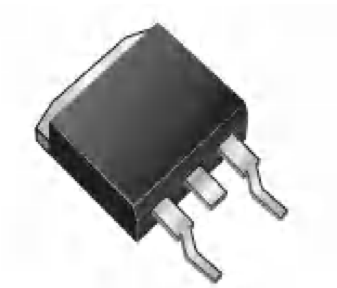
$R_{DS(ON)}$ < 5.5mΩ @ V_{GS}=10V （Type：4.5mΩ）

Application

Battery protection

Load switch

Uninterruptible power supply



Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	30	V
VGSS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	100	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	46	A
IDM	Pulsed Drain Current note1	300	A
EAS	Single Pulsed Avalanche Energy note2	56	mJ
P_D@T_C=25℃	Total Power Dissipation[4]	68	W
$R_{\theta}JA$	Thermal Resistance Junction-ambient (Steady State)[1]	62	℃/W
$R_{\theta}JA$	Thermal Resistance Junction-Ambient [1] (t ≤10s)	25	℃/W
RθJC	Thermal Resistance, Junction to Case	2.2	℃/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +175	℃

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30	32	-	V
△BVDSS/△TJ	BVDSS Temperature Coefficient	Reference to 25℃, ID=1mA	---	0.028	---	V/℃
VGS(th)	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1.2	1.6	2.5	V
RDS(on)	Static Drain-Source on-Resistance note3	V_{GS} =10V, I_D =30A	-	4.5	5.5	mΩ
RDS(on)	Static Drain-Source on-Resistance note3	V_{GS} =4.5V, I_D =20A	-	8.0	9.5	mΩ
IDSS	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} = 0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±20V	-	-	±100	nA
C_{iss}	Input Capacitance	V_{DS} =15V, V_{GS} =0V, f = 1.0MHz	-	1614	-	pF
Coss	Output Capacitance		-	245	-	pF
Crss	Reverse Transfer Capacitance		-	215	-	pF
Q_g	Total Gate Charge	V_{DS} =15V, I_D =30A, V_{GS} =10V	-	33.7	-	nC
Q_{gs}	Gate-Source Charge		-	8.5	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	7.5	-	nC
td(on)	Turn-on Delay Time	V_{DS}=15V, I_D=30A, R_{GEN}=3Ω, V_{GS} =10V	-	7.5	-	ns
t_r	Turn-on Rise Time		-	14.5	-	ns
td(off)	Turn-off Delay Time		-	35.2	-	ns
t_f	Turn-off Fall Time		-	9.6	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	70	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	280	A
VSD	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=30A	-	-	1.2	V

Note :

1、The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .

3、The test cond≦ 300us duty cycle ≦ 2%, duty cycle ition is VDD=24VGS=10V,L=0.1mH,IAS=15A

4、The power dissipation is limited by 175℃ junction temperature

5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

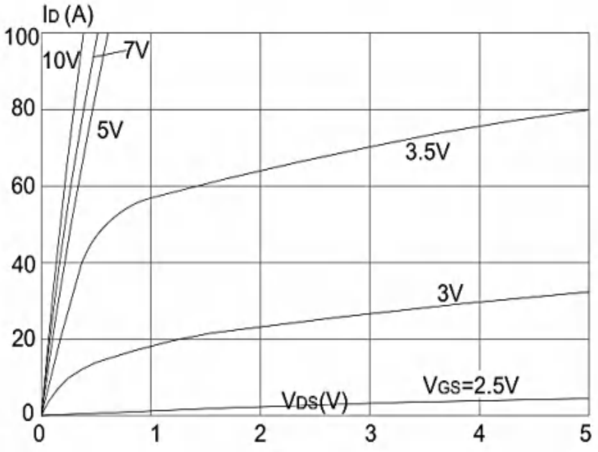


Figure1: Output Characteristics

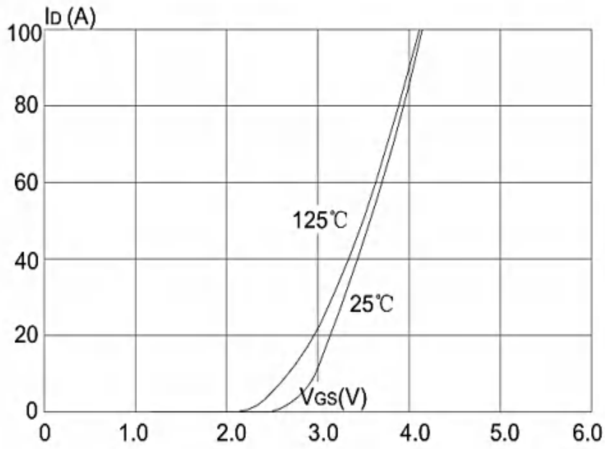


Figure 2: Typical Transfer Characteristics

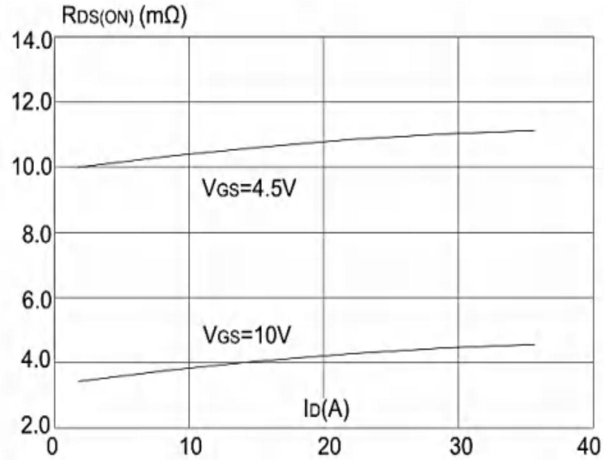


Figure 3:On-resistance vs. Drain Current

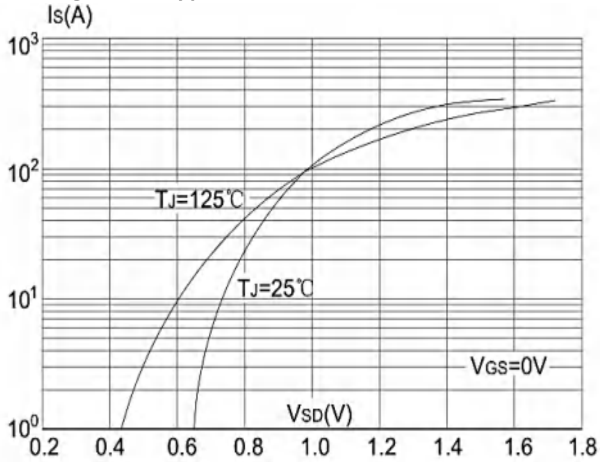


Figure 4: Body Diode Characteristics

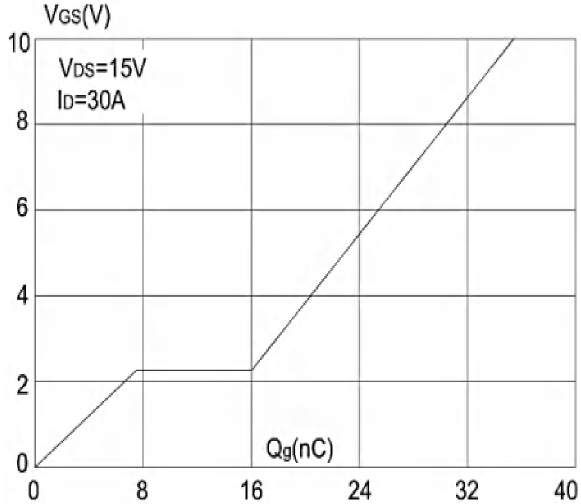


Figure 5: Gate Charge Characteristics

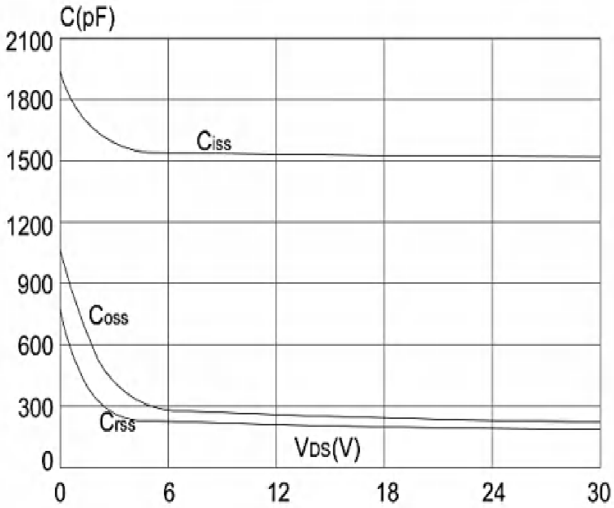


Figure 6: Capacitance Characteristics

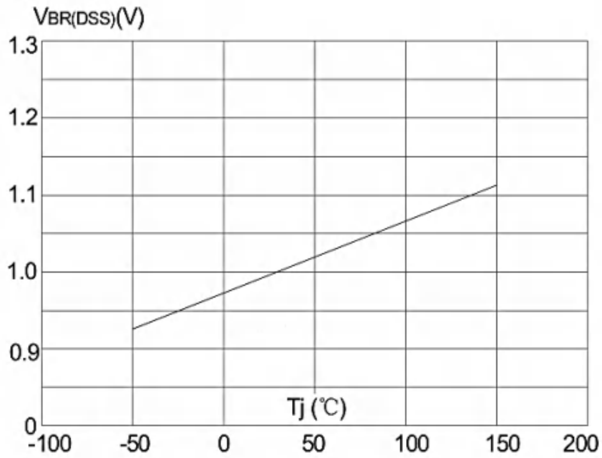


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

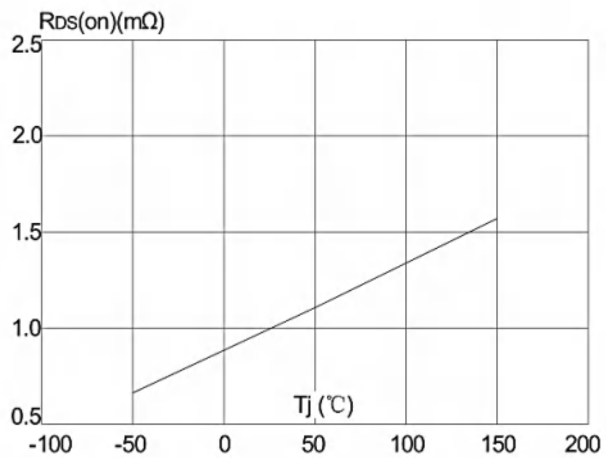


Figure 8: Normalized on Resistance vs Junction Temperature

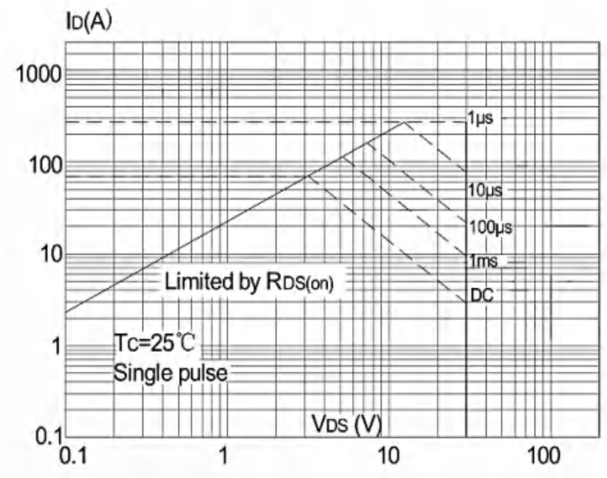


Figure 9: Maximum Safe Operating Area vs. Case Temperature

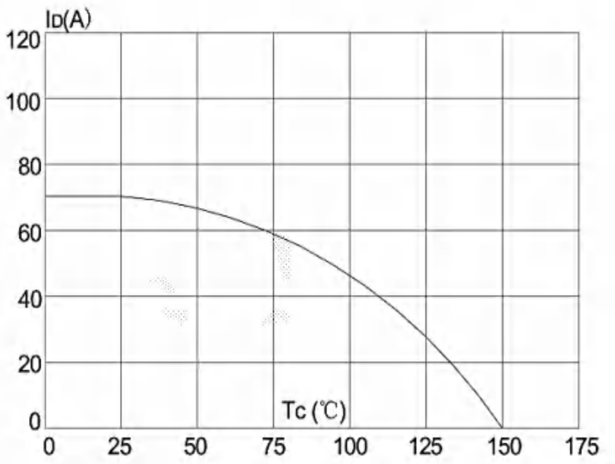


Figure 10: Maximum Continuous Drain Current

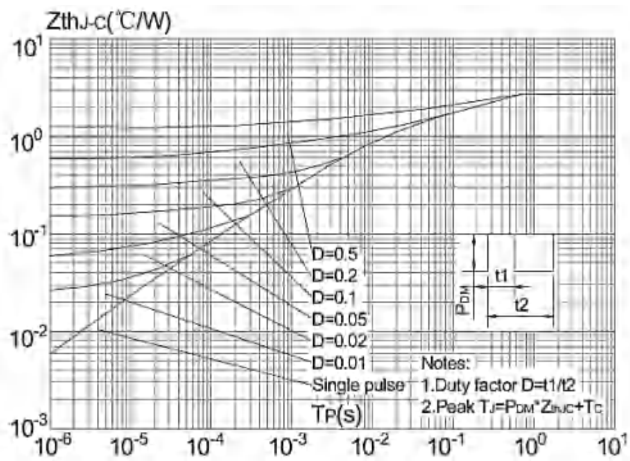
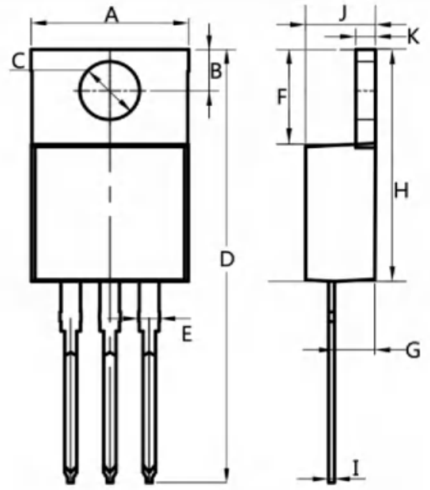


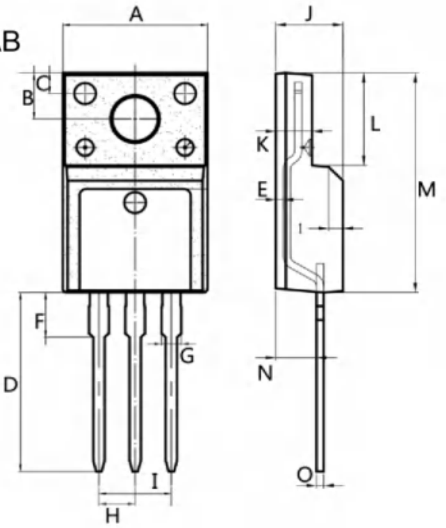
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-220AB



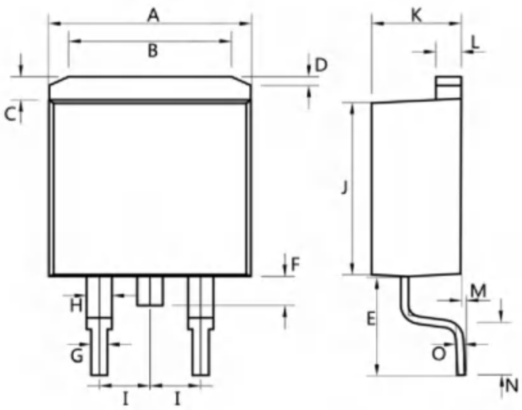
Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

ITO-220AB



Dim.	Min.	Max.
A	9.9	10.3
B	2.9	3.5
C	1.15	1.45
D	12.75	13.25
E	0.55	0.75
F	3.1	3.5
G	1.25	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.55	4.75
K	2.4	2. 7
L	6.35	6.75
M	15.0	16.0
N	2.75	3.15
O	0.45	0.60
All Dimensions in millimeter		

TO-263



Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		