

V_{DS} 30 V
 I_D 30 A
 $R_{DS(ON)}$ 10 mΩ

Features

Low Gate Charge
100% UIS Tested, 100% DVDS Tested
High Power and current handing capability
Lead free product is acquired

Application

Load switch
PWM applications
Power management

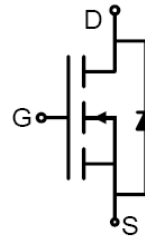
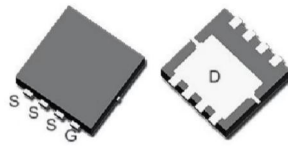


LOGO **GK** XXX CODE

30N03DF



PDFN3X3-8L top&bottom view Equivalent Circuit



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	30	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 20	V
I_D	Drain Current-Continuous($T_C=25^\circ\text{C}$)	30	A
	Drain Current-Continuous($T_C=100^\circ\text{C}$)	46	A
I_{DM} (pulse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	292	A
P_D	Maximum Power Dissipation($T_C=25^\circ\text{C}$)	44	W
	Maximum Power Dissipation($T_C=100^\circ\text{C}$)	18	W
E_{AS}	Avalanche energy (Note 2)	132	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		2.82	$^\circ\text{C}/\text{W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V, T_J=25^\circ\text{C}$			1	μA
		$V_{DS}=30V, V_{GS}=0V, T_J=125^\circ\text{C}$			100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1		2.2	V
g_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=20A$		34		S
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=15A, T_J=25^\circ\text{C}$		10	13	$m\Omega$
		$V_{GS}=4.5V, I_D=10A, T_J=25^\circ\text{C}$		15	20	$m\Omega$
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1.0MHz$		1730		pF
C_{oss}	Output Capacitance			192		pF
C_{rss}	Reverse Transfer Capacitance			171		pF
R_g	Gate resistance	$V_{GS}=0V, V_{DS}=0V, f=1.0MHz$		1.1		Ω
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	$V_{GS}=10V, V_{DS}=15V, R_L=1\Omega, R_{GEN}=3\Omega$		11		nS
t_r	Turn-on Rise Time			55		nS
$t_{d(off)}$	Turn-Off Delay Time			198		nS
t_f	Turn-Off Fall Time			120		nS
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=15V, I_D=15A$		16		nC
Q_{gs}	Gate-Source Charge			5		nC
Q_{gd}	Gate-Drain Charge			6.5		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				30	A
V_{SD}	Forward on Voltage (Note 3)	$V_{GS}=0V, I_S=20A$			1.2	V
t_{rr}	Reverse Recovery Time	$I_F=20A, dI/dt=100A/\mu s$		12		ns
Q_{rr}	Reverse Recovery Charge	$I_F=20A, dI/dt=100A/\mu s$		4		nC

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2. E_{AS} condition: $T_J=25^\circ\text{C}, V_{DD}=20V, V_G=10V, R_g=25\Omega, L=0.5mH$.

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

RATING AND CHARACTERISTIC CURVES

Figure 1. Output Characteristics

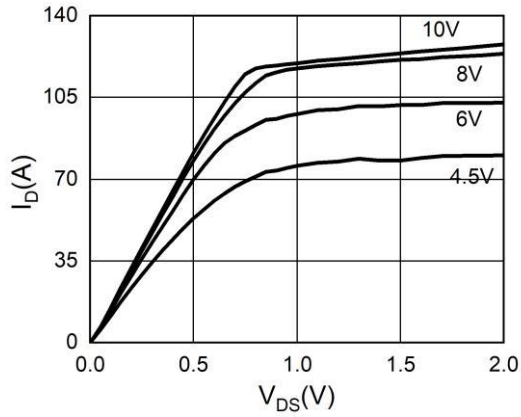


Figure 2. Transfer Characteristics

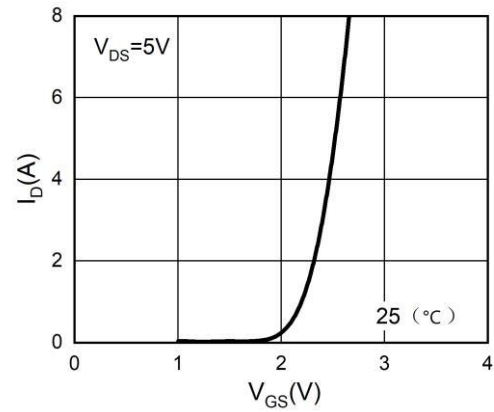


Figure 3. Power Dissipation

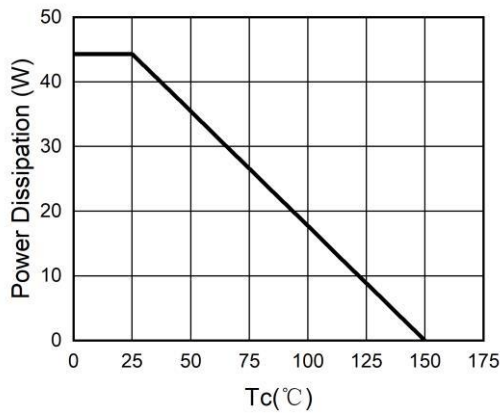


Figure 4. Drain Current

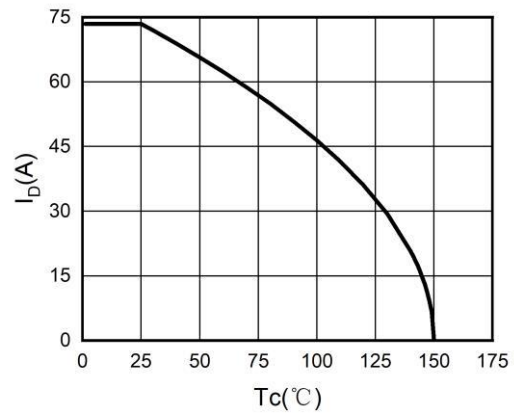


Figure 5. BV_{DSS} vs Junction Temperature

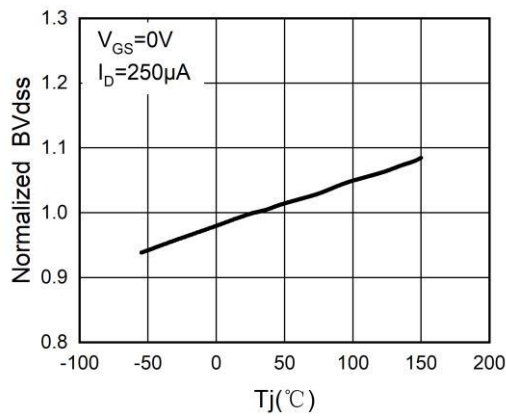
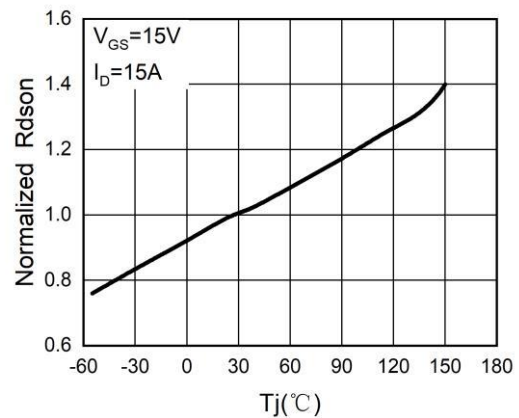


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



RATING AND CHARACTERISTIC CURVES

Figure 7. Gate Charge Waveforms

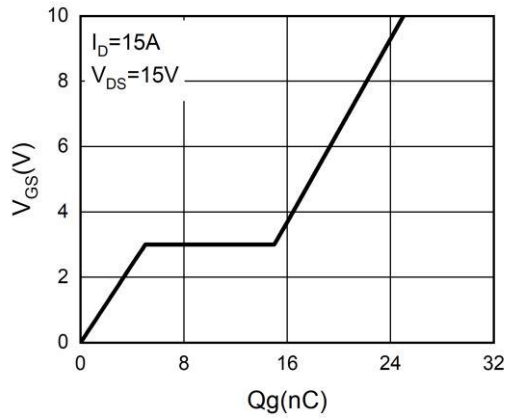


Figure 8. Capacitance

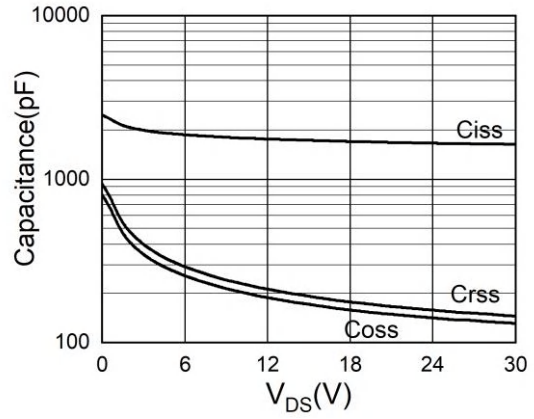


Figure 9. Body-Diode Characteristics

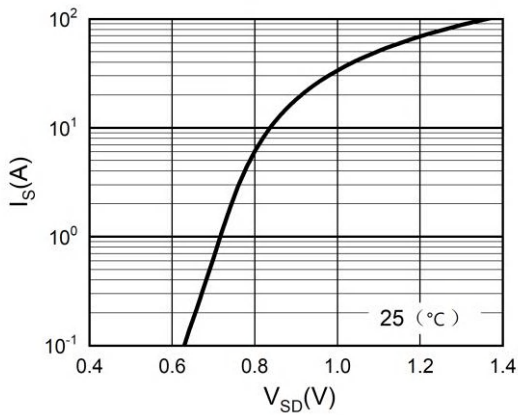
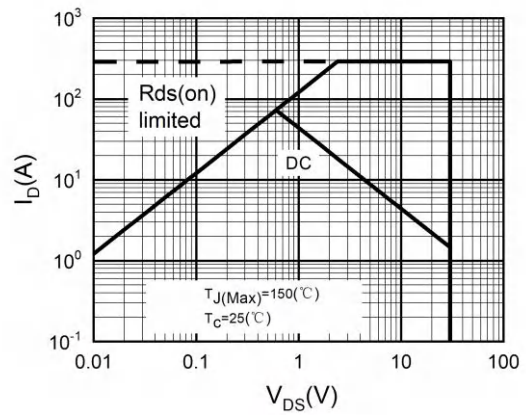
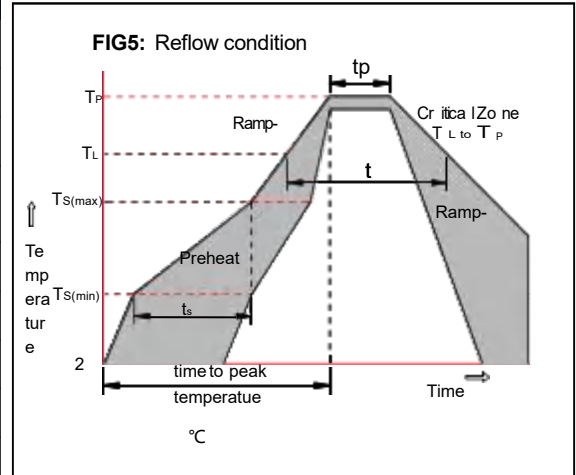


Figure 10. Maximum Safe Operating Area



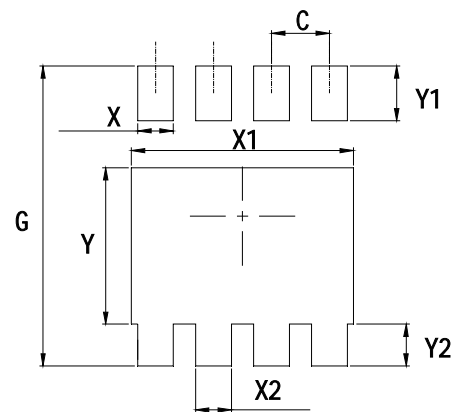
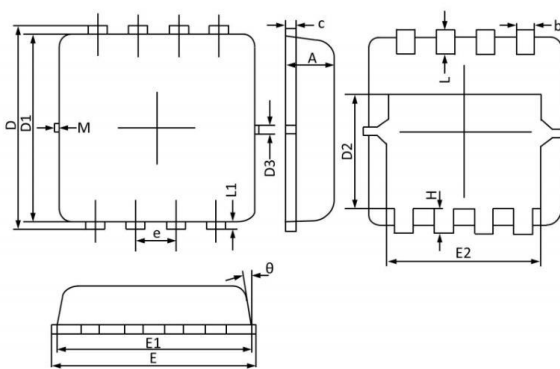
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

PDFN3X3 Package Information



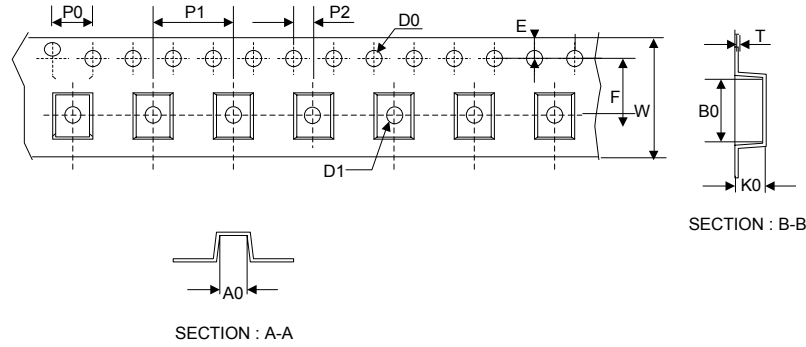
DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.70	0.75	0.80	b	0.25	0.30	0.35
C	0.10	0.15	0.25	D	3.25	3.35	3.45
D1	3.00	3.10	3.20	D2	1.78	1.88	1.98
D3	--	0.13	--	E	3.20	3.30	3.40
E1	3.00	3.15	3.20	E2	2.39	2.49	2.59
e	0.65BSC			H	0.30	0.39	0.50
L	0.30	0.40	0.50	L1	--	0.13	--
theta	--	10°	12°	M	*	*	0.15

Dimensions	Value (in mm)
C	0.65
G	3.60
X	0.40
X1	2.60
X2	0.40
Y	1.95
Y1	0.62
Y2	0.55

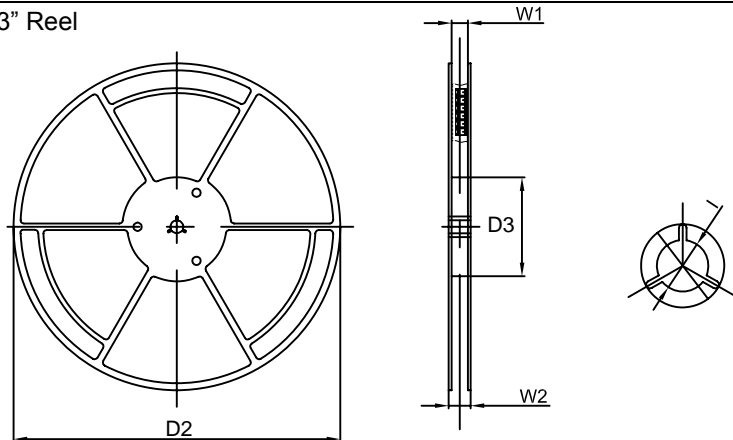
Tape & reel specification

Tape



Symbol	Dimension (mm)
P0	4.00±0.20
P1	8.00±0.20
P2	2.00±0.20
D0	1.55±0.20
D1	1.55±0.20
E	1.75±0.20
F	5.50±0.20
W	12.00±0.20
A0	3.90±0.20
B0	3.80±0.20
K0	1.20±0.20
T	0.20±0.20
D2	330.0±5.0
D3	100.0±4.0
W1	12.0±5.0
W2	14.0±5.0
I	13.0±2.0

13" Reel



Quantity: 5000PCS