

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	1.8mΩ@10V	85A
	2.7mΩ@4.5V	

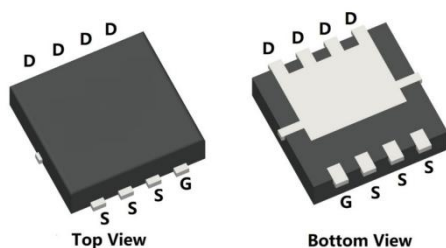
Feature

- Excellent package for heat dissipation
- Excellent $R_{DS(on)}$
- Low gate charge

Application

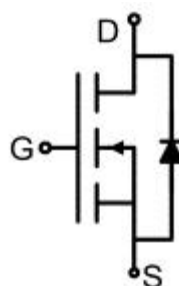
- Boost driver
- Brushless motor
- BLDC

Package

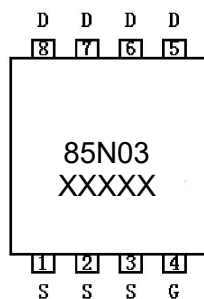


PDFN3.3X3.3-8L

Circuit diagram



Marking



Absolute maximum ratings (T_C=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _C =25°C)	I _D	85	A
Continuous Drain Current ¹⁾ (V _{GS} =10V, T _C =100°C)	I _D (100 °C)	80	A
Pulsed Drain Current	I _{DM}	600	A
Power Dissipation ³⁾	P _D	66	W
Single pulse avalanche energy ²⁾	E _{AS}	180	mJ
Thermal Resistance, Junction-to-Case ¹⁾	R _{θJC}	1.7	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 1mA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V			1	mA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250mA	1.2	1.7	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		1.3	1.8	mΩ
		V _{GS} = 4.5V, I _D = 15A		2.0	2.7	
Forward Transconductance	G _{FS}	V _{DS} = 5V, I _D = 20A		85		S
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		2554		pF
Output Capacitance	C _{oss}			924		
Reverse Transfer Capacitance	C _{rss}			73		
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 0 to 10V, I _D = 20A		39.1		nC
Gate-Source Charge	Q _{gs}			6.7		
Gate-Drain Charge	Q _{gd}			5.9		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.4		Ω
Turn-on delay time	t _{d(on)}	V _{DS} = 15V, V _{GS} = 10V, R _L = 0.75Ω, R _{GEN} = 3Ω		10		nS
Turn-on rise time	t _r			7.3		
Turn-off delay time	t _{d(off)}			38.6		
Turn-off fall time	t _f			16.4		
Source-Drain Diode characteristics						
Diode Forward Current	I _S	T _C = 25°C			85	A
Diode Forward voltage	V _{SD}	V _{GS} = 0V, I _S = 1A			1.2	V
Reverse Recovery Time	T _{rr}	I _F = 20A, dI _F /dt = 100A/μs		54		nS
Reverse Recovery Charge	Q _{rr}			57		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The EAS data shows Max. rating. The test condition is V_{DD} = 32V, V_{GS} = 10V, L = 0.1mH, I_{AS} = 54A.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

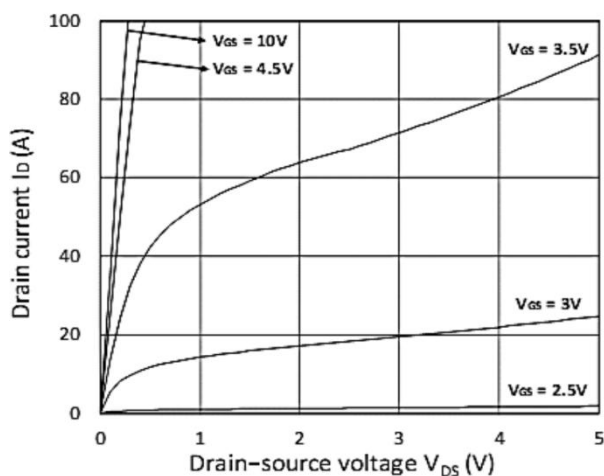


Figure 1. Output Characteristics

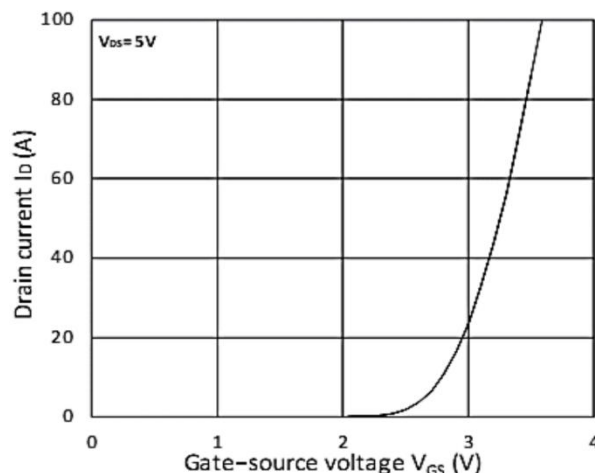


Figure 2. Transfer Characteristics

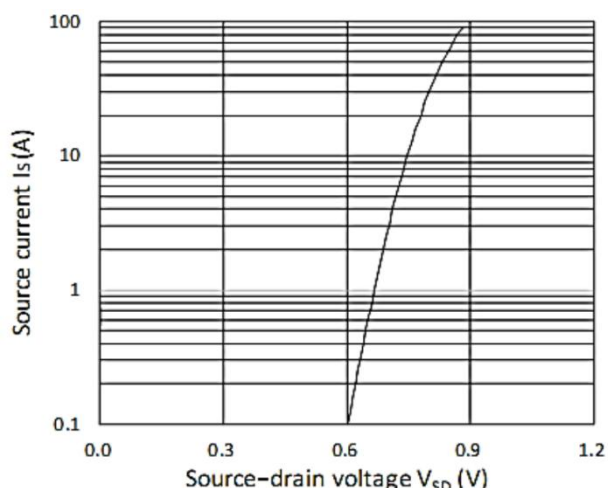


Figure 3. Forward Characteristics of Reverse

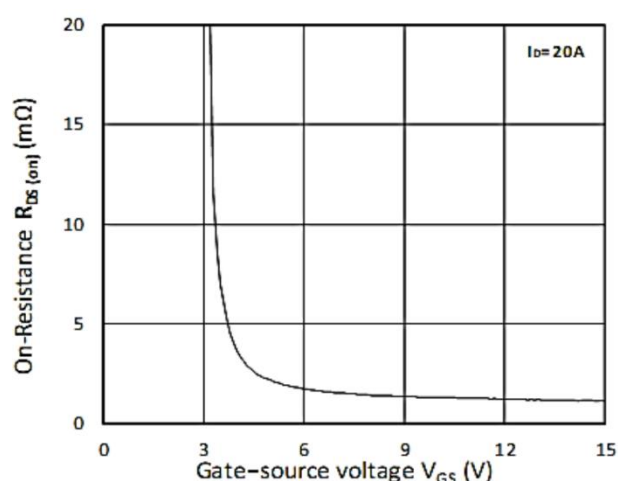


Figure 4. R_DS(ON) vs. V_GS

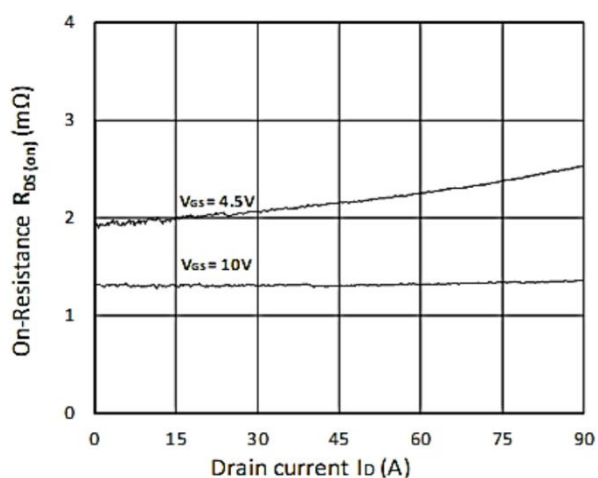


Figure 5. R_DS(ON) vs. I_D

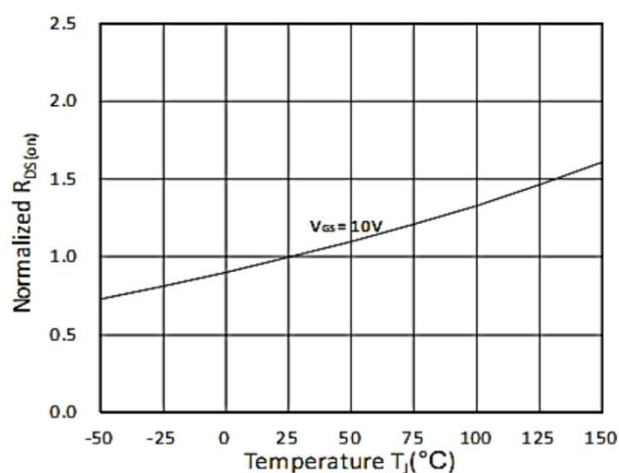


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

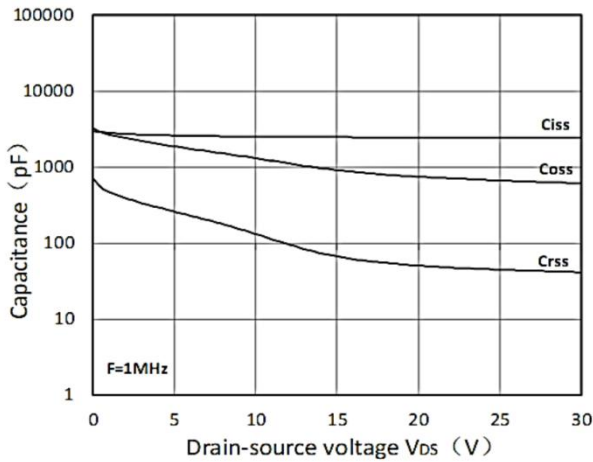


Figure7. Capacitance Characteristics

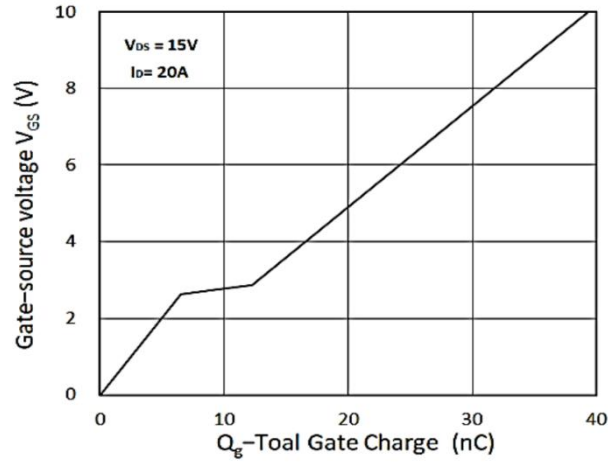


Figure8. Gate Charge Characteristics

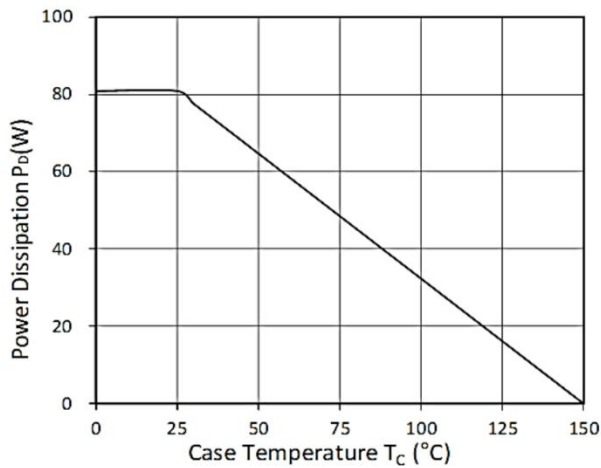


Figure9. Power Dissipation

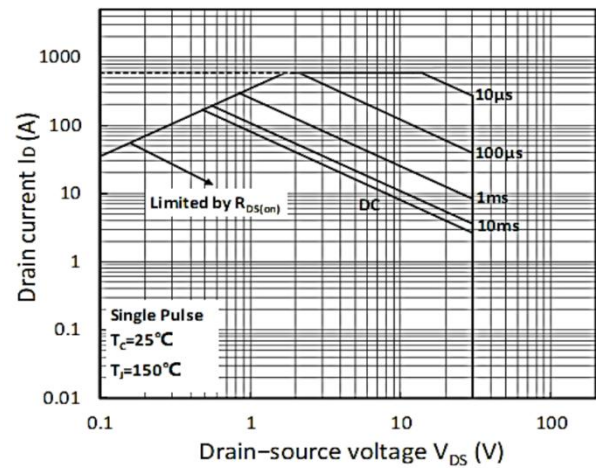


Figure10. Safe Operating Area

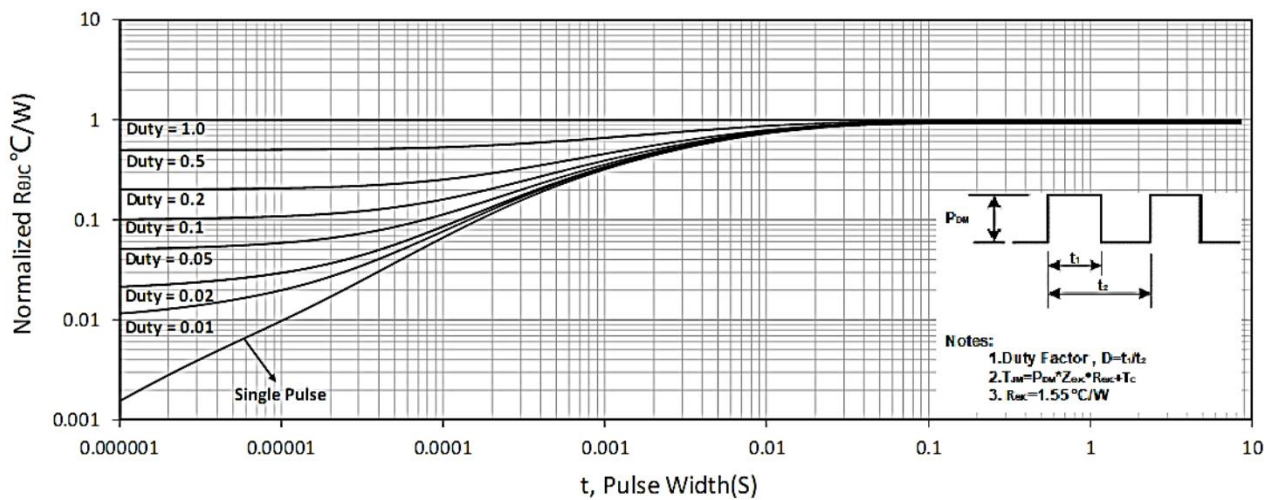
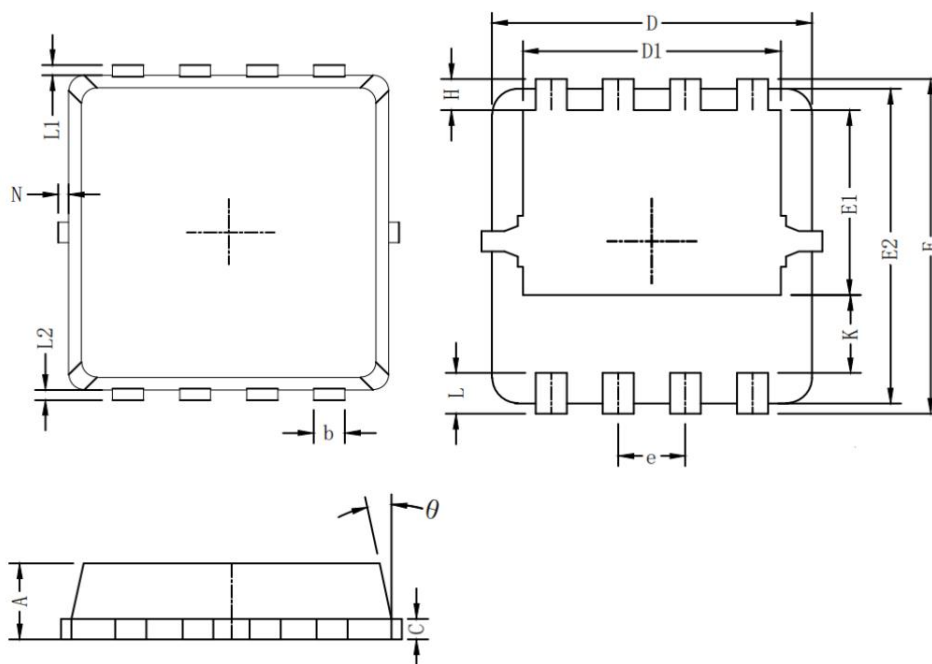


Figure11. Normalized Maximum Transient Thermal Impedance

PDFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.600	0.900	0.024	0.035
b	0.200	0.400	0.008	0.016
C	0.150	0.250	0.006	0.010
D	3.000	3.200	0.118	0.126
D1	2.300	2.600	0.091	0.102
E	3.150	3.450	0.124	0.136
E1	1.430	1.930	0.056	0.076
E2	2.900	3.200	0.114	0.126
e	0.650 BSC.		0.026 BSC.	
H	0.200	0.500	0.008	0.020
K	0.570	0.870	0.022	0.034
L	0.300	0.500	0.012	0.020
L1/L2	0.100 REF.		0.004 REF.	
θ	8°	13°	8°	13°
N	0.000	0.15	0.000	0.006