

DX65T400 E-mode 650V,7A,400mΩ GaN HEMT

1. Features

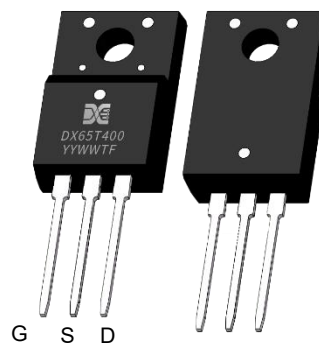
- 650 V enhancement mode power switch
- Easy gate drive requirements
- Very high switching frequency
- Fast and controllable fall and rise times
- Zero reverse recovery loss

2. Key performance parameters

Parameter	Value	Unit
VDS,max	650	V
RDS(on),max@VGS=6V	400	mΩ
QG,typ@VDS=400V	1.3	nC
ID	7	A

3. Device Information

Part Number	Package	Packing
DX65T400	TO-220F	50pcs/tube



4. Applications

- Fast Battery Charging
- Power Factor Correction
- Wireless Power Transfer
- LED lighting drivers
- LLC Converters

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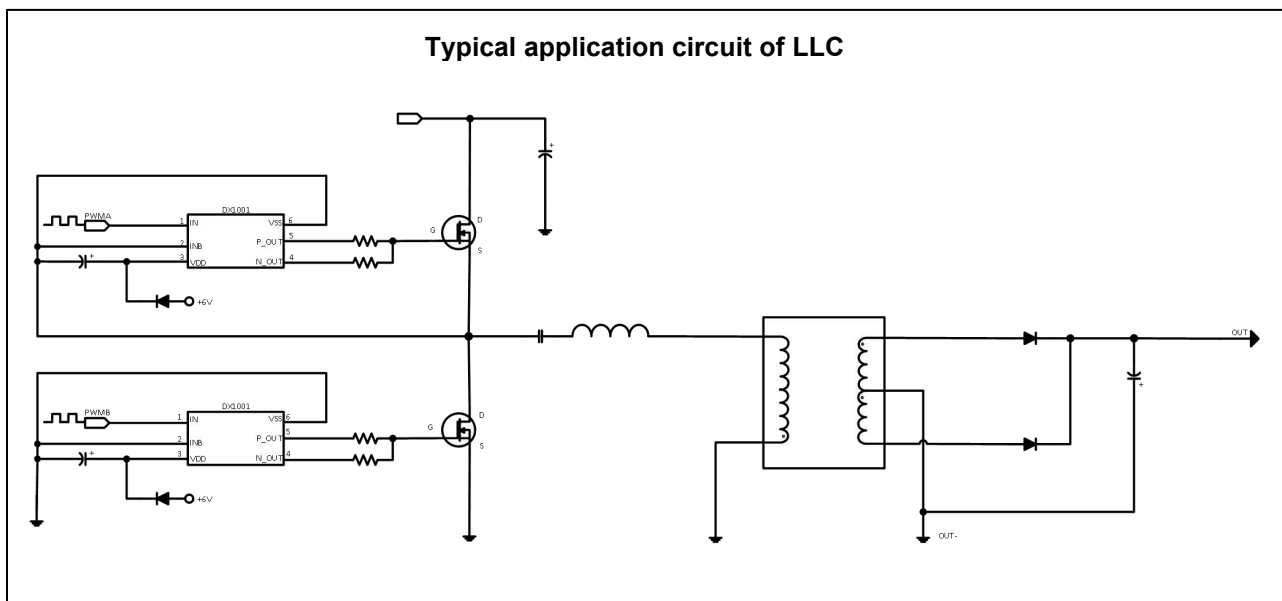
5. Description

DX65T400 is an enhancement mode GaN-on-silicon transistor. GaN is a wide band gap semiconductor with high power density. The gallium nitride transistor is characterized by no body diode, so the reverse recovery charge is zero. This GaN FET is a high performance e-Mode GaN FET that achieves excellent high-frequency and high efficiency operation. Features include a simple gate input and a Source Kelvin pin for noise immunity. This GaN power FET combines the highest dV/dt immunity and industry-standard low-profile, low inductance, bottom-side cooled SMT QFN packaging to enable designers to achieve simple, quick and reliable solutions.

6. Absolute Maximum Ratings (Tc=25°C unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT	Condition
Drain-Source voltage	V_{DS}	650	V	
Gate-source voltage	V_{GS}	-1.4 to 7	V	
Continuous drain current*	I_D	7	A	Tc=25°C
Operation and storage temperature	T_j	-55 to 150	°C	
	T_{stg}	-55 to 150	°C	

* An Estimated Value



7. Electrical Characteristics (Tc=25℃ unless otherwise specified)

7.1 Typical Performance – Static

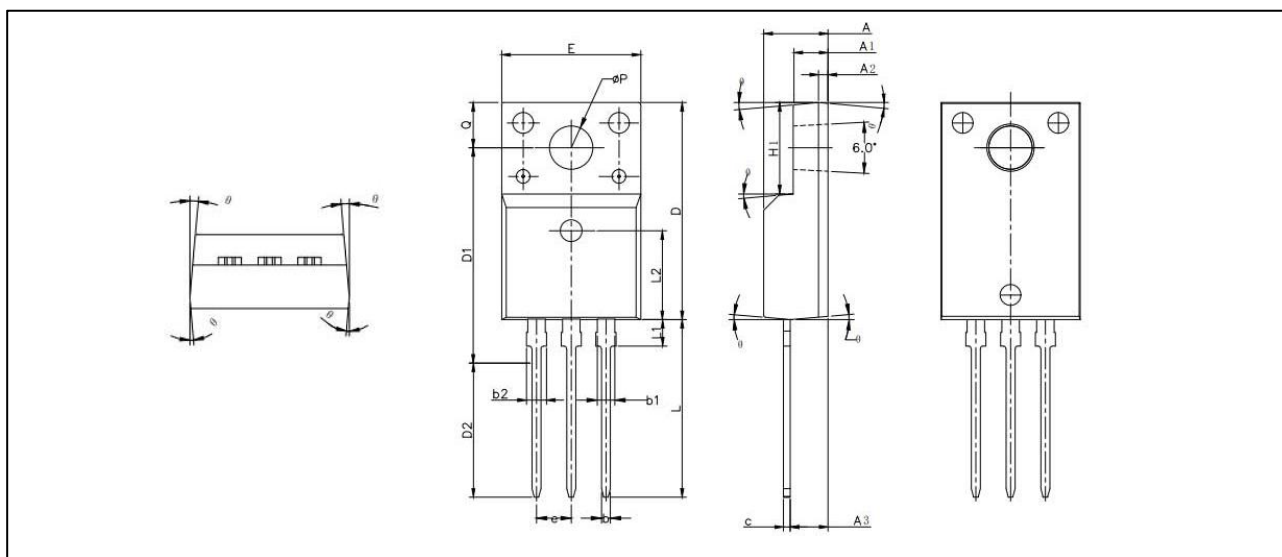
Parameter	Symbol	Value			Unit	Test condition
		Min.	Type.	Max.		
Drain source breakdown voltage	BV _{DS}	650	/	/	V	VGS=0V, ID=20μA
Total drain leakage current	I _{DSS}	/	0.3	10	μA	VDS=650V, VGS=0V, Tj=25℃
		/	5	75	μA	VDS=650V, VGS=0V, Tj=150℃
Gate-to-source current	I _{GSS}	/	2	/	μA	VDS=0V, VGS=6V, Tj=25℃
Static drain-source on-resistance	R _{DS(ON)}	/	350	400	mΩ	VGS=6V, ID=2A, Tj=25℃
		/	650	/	mΩ	VGS=6V, ID=2A, Tj=150℃
Gate threshold voltage	V _{GS(th)}	1.2	1.6	2.5	V	VDS=VGS, ID=5.2mA,

7.2 Typical Performance – Dynamic

Parameter	Symbol	Values			Unit	Test condition
		Min.	Type.	Max.		
Input capacitance	C _{ISS}	/	32	/	pF	VDS=400V, VGS=0V, f=1MHz
Output capacitance	C _{OSS}	/	9	/	pF	
Reverse transfer capacitance	C _{RSS}	/	0.3	/	pF	
Output capacitance, energy related	C _{OSS(er)}	/	15	/	pF	VDS=0V to 400V, VGS=0V
Output capacitance time related	C _{OSS(tr)}	/	21	/	pF	
Total gate charge	Q _G	/	1.3	/	nC	VDS=400V, VGS=0V to 6V
Gate-drain charge	Q _{GD}	/	0.6	/	nC	
Gate-source charge	Q _{GS}	/	0.33	/	nC	
Gate Resistance	R _G	/	2.88	/	Ω	f = fres, Open drain



8. Package



COMMON DIMENSIONS

ITEM	mm		
	MIN	NOM	MAX
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A2	0.70REF		
A4	2.56	2.76	2.96
b	0.60	0.65	0.70
b1	1.23	-	1.38
b2	1.23	-	1.47
c	0.45	0.50	0.60
D	15.67	15.87	16.07
D1	15.55	15.75	15.95
D2	9.60	9.80	10.00
E	9.96	10.16	10.36
e	2.44	2.54	2.64
H1	6.48	6.68	6.88
L	12.68	12.98	13.28
L1	-	-	2.10
L2	6.50REF		
Ø1	3.08	3.18	3.28
Q	3.20	-	3.40
θ	3°	5°	7°