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

Contents

1. Features

- 650 V enhancement mode power switch
- $R_{DS(on)}$ =400mΩ
- $I_{DS(max)}$ = 7A
- Easy gate drive requirements (0 V to 6 V)
- Very high switching frequency (> 10 MHz)
- Fast and controllable fall and rise times
- Zero reverse recovery loss

2. Applications

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

Device Information

Part Number	Package	Packing
DX65T400	TO-220F	50

3. 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.

4. Absolute Maximum Ratings(Tc=25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit	Condition
Drain-Source voltage	V_{DS}	650	V	
Gate-source voltage	V_{GS}	-10 to 6	V	
Continuous drain current*	I_D	7	A	Tc=25℃
		4	A	Tc=125℃
Operation and storage temperature	Tj	-55 to 150	℃	
	Tstg	-55 to 150	℃	

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

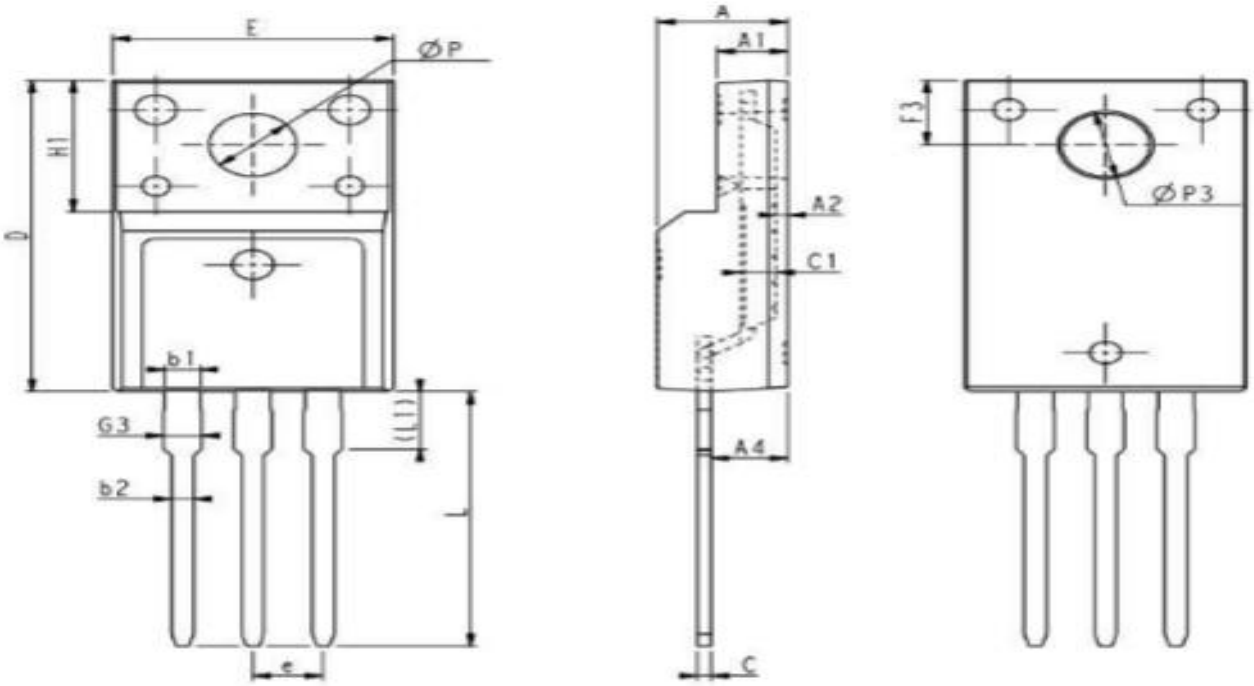
5.1 Typical Performance – Static

Parameter	Symbol	Values			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_{GS}	/	2	/	μA	VDS=0V, VGS=6V, Tj=25℃
Static drain-source on-resistance	$R_{DS(ON)}$	/	350	400	mΩ	VGS=6V, ID=3A, Tj=25℃
		/	650	/	mΩ	VGS=6V, ID=3A, Tj=150℃
Gate threshold voltage	$V_{GS(th)}$	1.2	1.6	2.0	V	VDS=VGS, ID=3.5mA ,

5.2 Typical Performance – Dynamic

Parameter	Symbol	Values			Unit	Test condition
		Min	Type	Max		
Input capacitance	C_{ISS}	/	32	/	pF	V_{DS}=400V, V_{GS}=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	V_{DS}=0V to 400V,V_{GS}=0V
Output capacitance time related	$C_{OSS(tr)}$	/	21	/	pF	
Total gate charge	Q_G	/	1.3	/	nC	V_{DS}=400V, V_{GS}=0V to 6V
Gate-drain charge	Q_{GD}	/	0.33	/	nC	
Gate-source charge	Q_{GS}	/	0.6	/	nC	
Gate Resistance	R_G	/	2.88	/	Ω	*f* = *f*res, Open drain

6. Package



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
E	9.96	10.16	10.36
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A2	0.30	0.45	0.60
A4	2.56	2.76	2.96
c	0.40	0.50	0.65
c1	1.20	1.30	1.35
D	15.57	15.87	16.17
H1		6.70REF	
e		2.54BSC	
L	12.68	12.98	13.28
L1	2.93	3.03	3.13
ΦP	3.03	3.18	3.38
ΦP3	3.15	3.45	3.65
F3	3.15	3.30	3.45
G3	1.25	1.35	1.55
b1	1.18	1.28	1.43
b2	0.70	0.80	0.95