

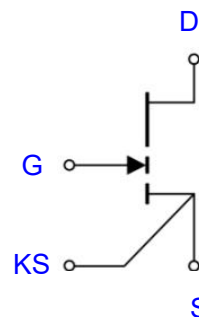
Contents

1. Features	2
2. Device Information	2
3. Applications	2
4. Description	3
5. Absolute Maximum Ratings (Tc=25℃ unless otherwise specified)	3
6. Electrical Characteristics (Tc=25℃ unless otherwise specified)	3
6.1 Typical Performance – Static	3
6.2 Typical Performance – Dynamic	4
6.3 Characteristic Curve	4
7. Package Outline Dimensions	6
8. Product packaging	7

DX65C400 E-mode 650V,7A,400mΩ GaN HEMT

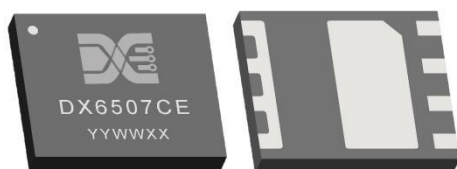
1. Features

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

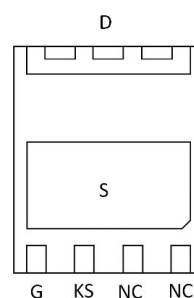


2. Device Information

Part Number	Marking Code	Package	Packing
DX65C400	DX6507CE	DFN5x6	Tape 4000pcs/reel



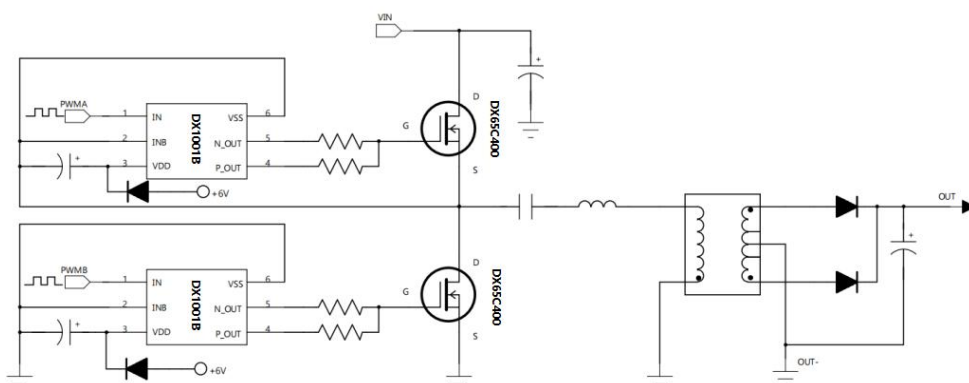
DX65C400 DFN5x6



DX65C400 Bottom View

3. Applications

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



Typical application circuit of LLC

4. Description

DX65x400 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.

5. 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}	-10 to 6	V	
Continuous drain current*	I_D	7	A	Tc=25°C
		4	A	Tc=125°C
Operation and storage temperature	T_j	-55 to 150	°C	
	T_{stg}	-55 to 150	°C	

* An Estimated Value

6. Electrical Characteristics (Tc=25°C unless otherwise specified)

6.1 Typical Performance – Static

Parameter	Symbol	Values			Unit	Test condition
		Min.	Type.	Max.		
Drain source breakdown voltage	BV_{DS}	650	/	/	V	$V_{GS}=0V$, $I_D=20\mu A$
Total drain leakage current	I_{DSS}	/	0.3	10	μA	$V_{DS}=650V$, $V_{GS}=0V$, $T_j=25^\circ C$
		/	5	75	μA	$V_{DS}=650V$, $V_{GS}=0V$, $T_j=150^\circ C$
Gate-to-source current	I_{GS}	/	2	/	μA	$V_{DS}=0V$, $V_{GS}=6V$, $T_j=25^\circ C$
Static drain-source on-resistance	$R_{DS(ON)}$	/	350	400	m Ω	$V_{GS}=6V$, $I_D=3A$, $T_j=25^\circ C$
		/	650	/	m Ω	$V_{GS}=6V$, $I_D=3A$, $T_j=150^\circ C$
Gate threshold voltage	$V_{GS(th)}$	1.2	1.6	2.0	V	$V_{DS}=V_{GS}$, $I_D=3.5mA$,

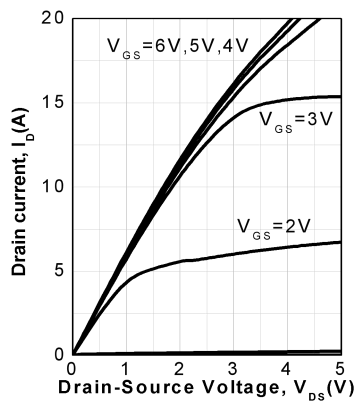
6.2 Typical Performance – Dynamic

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

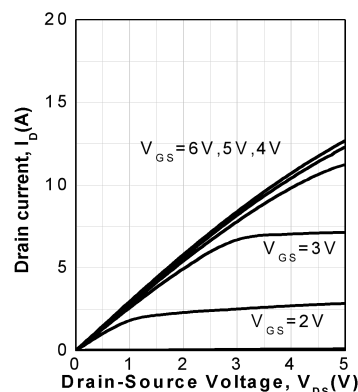
Thermal characteristics (DFN5x6)

Parameter	Symbol	Values	Unit	Note/Test Condition
Thermal resistance, junction-ambient	R_{thJA}	37.1	$^{\circ}C/W$	
Thermal resistance, junction-case	R_{thJC}	1.9	$^{\circ}C/W$	
Maximum reflow soldering temperature	T_{sold}	260	$^{\circ}C$	MSL3

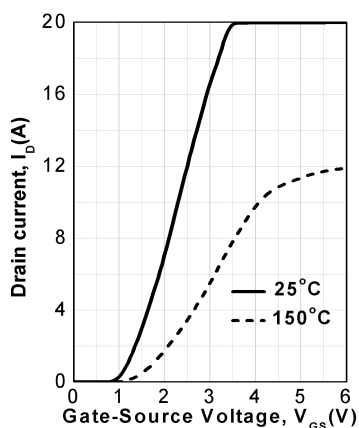
6.3 Characteristic Curve



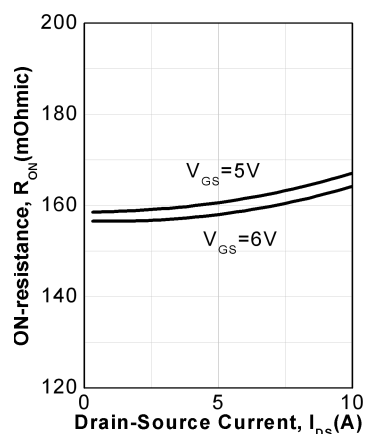
Typical output characteristics @ $T_j = 25^\circ\text{C}$



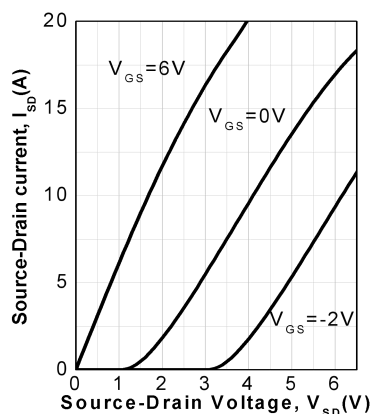
Typical output characteristics @ $T_j = 150^\circ\text{C}$



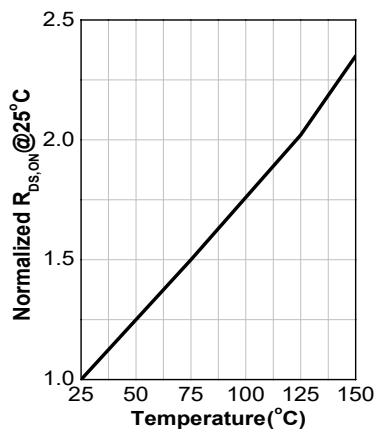
Typical transfer characteristics @ $V_{DS} = 5V$



ON-resistance for various drain current @ 25°C



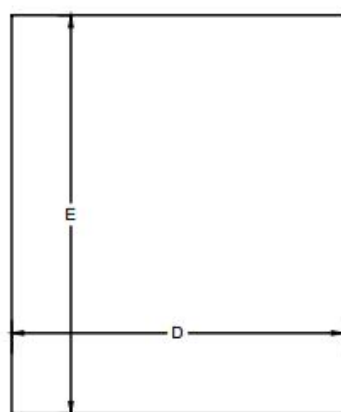
Typical reverse conduction characteristics



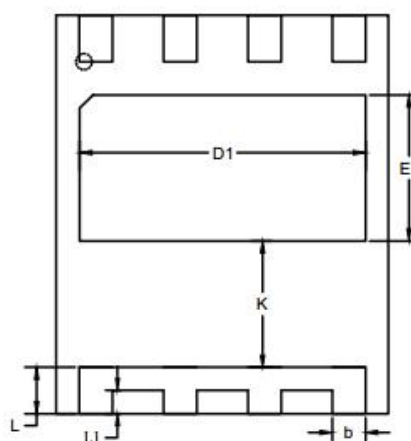
Normalized ON-resistance at various temperatures

7. Package Outline Dimensions

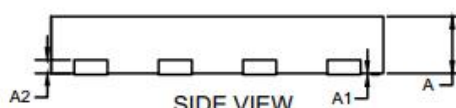
Dimensions(mm)			
Symbol	Min.	Nom.	Max.
A	0.8	0.85	0.9
A1	-	0.02	0.05
A2	0.2(REF)		
b	0.45	0.50	0.55
D	4.90	5.00	5.10
D1	4.20	4.30	4.40
E	5.90	6.00	6.10
E1	2.10	2.20	2.30
e	1.27		
k	1.9	-	-
L	0.65	0.7	0.75



TOP VIEW



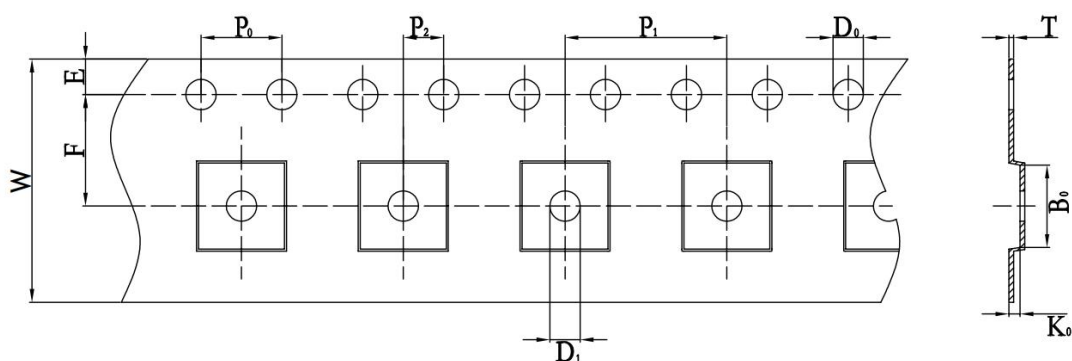
BOTTOM VIEW



SIDE VIEW

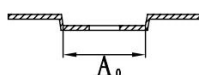
8. Product packaging

ITEM	W	Ao	Bo	Ko	E	F	D1	D0	P0	P1	P2	T
MIN	11.70	4.15	4.15	0.95	1.65	5.40	—	—	3.90	7.90	1.90	0.18
NOM	12.00	4.25	4.25	1.05	1.75	5.50	1.50	1.50	4.00	8.00	2.00	0.23
MAX	12.30	4.35	4.35	1.15	1.85	5.60	1.60	1.60	4.10	8.10	2.10	0.28



USER FEED DIRECTION

进料方向



产品符合ROHS 环境管理物质标准

