ENRAY

ER100N03CC

30V N-Channel MOSFET

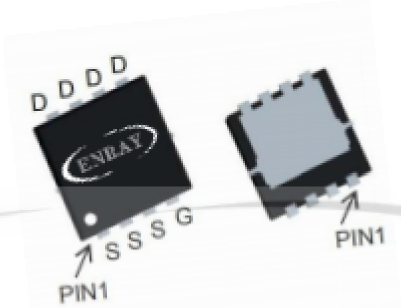
Features

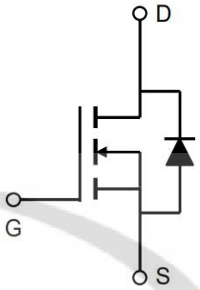
The E R 100N03CC is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications. The DS100N03CC meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

V_{DS}	30V
I_D	100A
$R_{DS(ON)}$ (at V_{GS} =10V)	< 4.7mΩ
$R_{DS(ON)}$ (at V_{GS} =4.5V)	< 10mΩ

PDFN3X3





Maximum Ratings(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current, VGS @ 10V^{1}	ID@TC =25℃	100	A
Continuous Drain Current, VGS @ 10V^{1}	ID@TC=100℃	50	
Continuous Drain Current, VGS @ 10V^{1}	ID@TA=25℃	19	
Continuous Drain Current, VGS @10V^{1}	ID@TA=70℃	16	
Pulsed Drain Current ①	IDM	162	
Single Pulse Avalanche Energy3	EAS	144.7	mj
Avalanche Current	I_{AS}	53.8	A
Power Dissipation ②	PD@TC=25℃	62.5	W
Power Dissipation ②	PD@TA=25℃	2.42	
Storage Temperature	T_{STG}	-55 to 175	℃
Operating Junction	TJ	-55 to 175	

Thermal Data

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Ambient	RθJA		62	℃/W
Thermal Resistance Junction-Ambient 1 (t ≤10s)	RθJA		25	℃/W
Thermal Resistance Junction-Case	RθJC		2.4	℃/W

Electrical Characteristics(TJ=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters ③						
Drain-Source Breakdown Voltage	BVDSS	VGS = 0V, ID = 250μA	30			V
Zero Gate Voltage Drain Current	IDSS	VDS = 30V, VGS =0V			1	μA
Gate-Body leakage Current	IGSS	VDS =0V, VGS = ±20V			±100	nA
Gate Threshold Voltage	VGS(th)	VDS =VGS, ID = 250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 30A		3.5	4.7	mΩ
		VGS = 4.5V, ID = 20A		6.0	10	mΩ
Dynamic Parameters ④						
Input Capacitance	Ciss	VDS = 15V,VGS =0V, f=1MHz		2100		pF
Output Capacitance	Coss			326		pF
Reverse Transfer Capacitance	Crss			282		pF
Total Gate Charge	Qg	VDS =15V, ID =30A, VGS =10		45		nC
Gate Source Charge	Qgs			3		nC
Gate Drain Charge	Qgd			15		nC
Switching Parameters ④						
Turn-On DelayTime	td(on)	VDS=15V, ID=30A, RGEN=3Ω, VGS =10		21		ns
Turn-On Rise Time	tr			32		ns
Turn-Off DelayTime	td(off)			59		ns
Turn-Off Fall Time	tf			34		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		IS			50	A
Maximum Pulsed Drain to Source Diode Forward Current		ISM			200	A
Drain to Source Diode Forward Voltage	VSD	VGS=0V, IS=30A			1.2	V
Body Diode Reverse Recovery Time	trr	IF=20A,dI/dt=100A/μs		15		NS
Body Diode Reverse Recovery Charge	Qrr			4		NC

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

Figure1: Output Characteristics

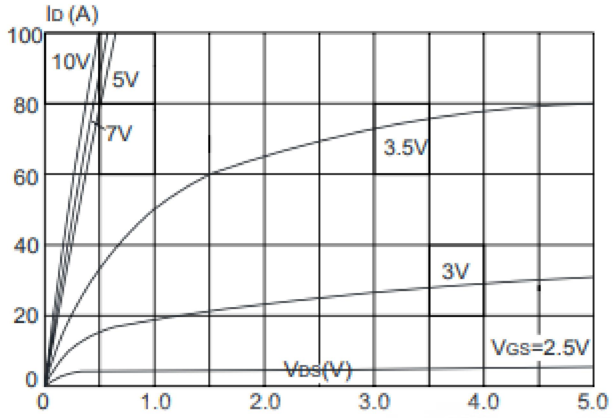


Figure 2: Typical Transfer Characteristics

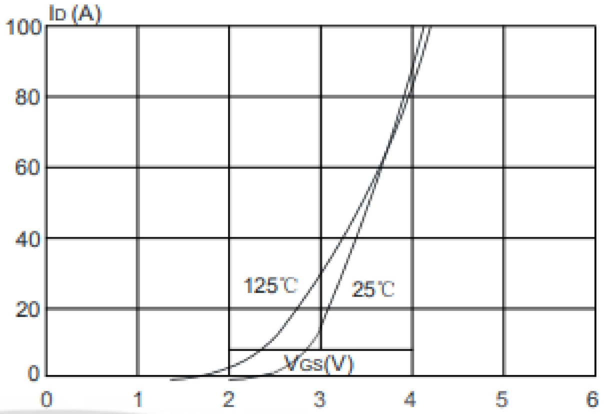


Figure 3: On-resistance vs. Drain Current

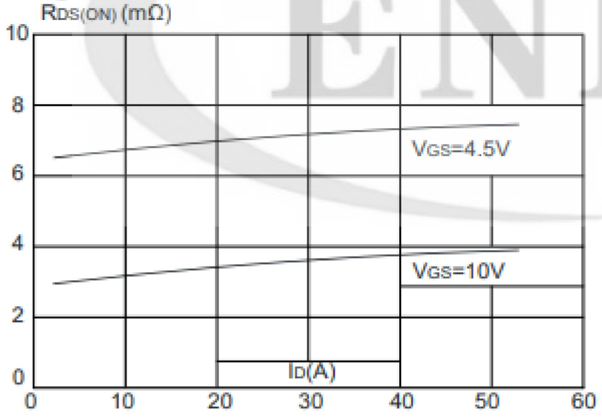


Figure 4: Body Diode Characteristics

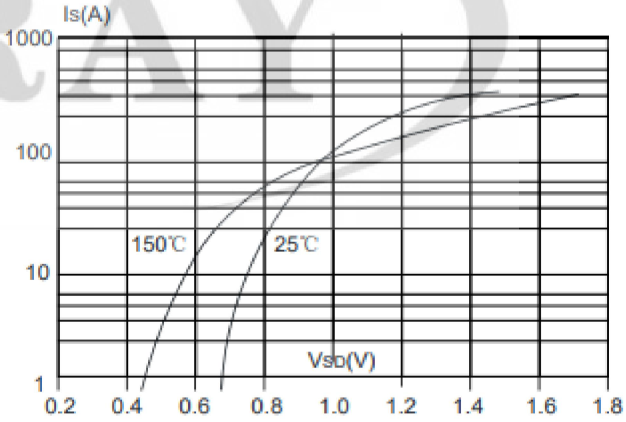


Figure 5: Gate Charge Characteristics

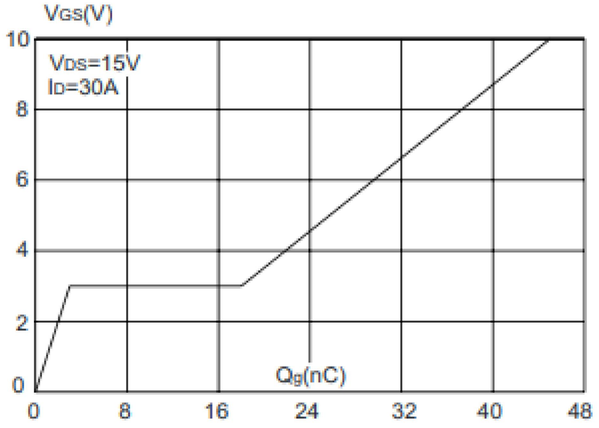
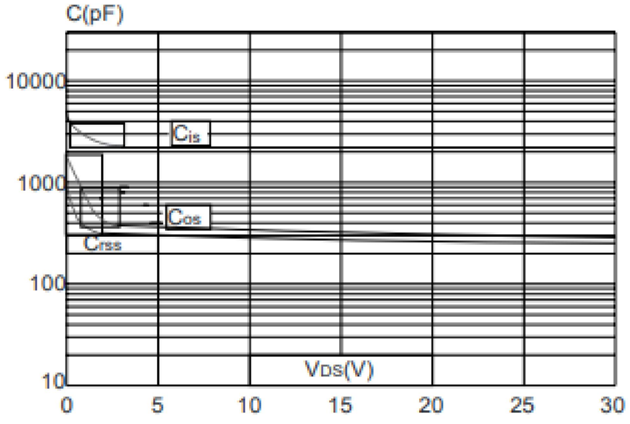


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

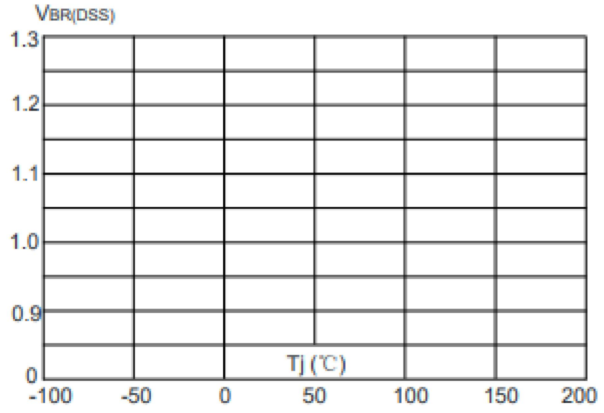


Figure 8: Normalized on Resistance vs. Junction Temperature

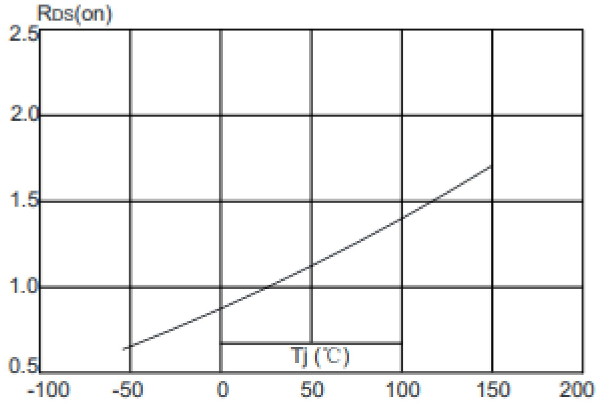


Figure 9: Maximum Safe Operating Area

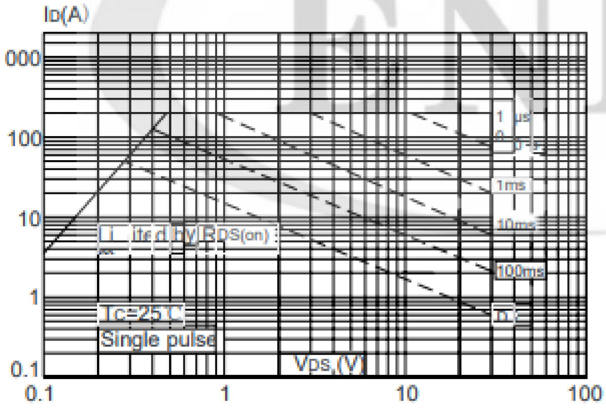


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

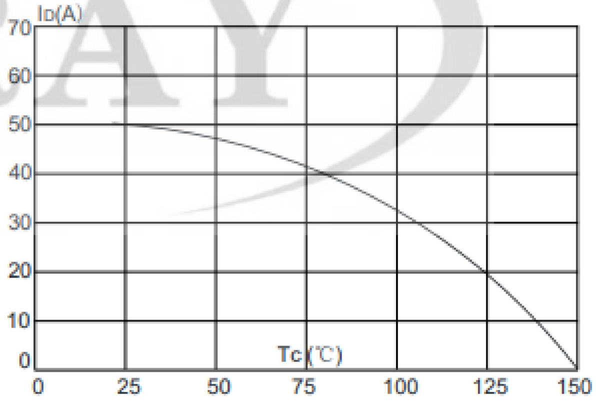
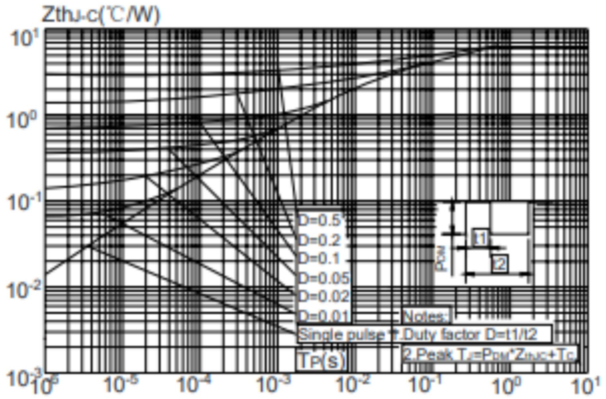
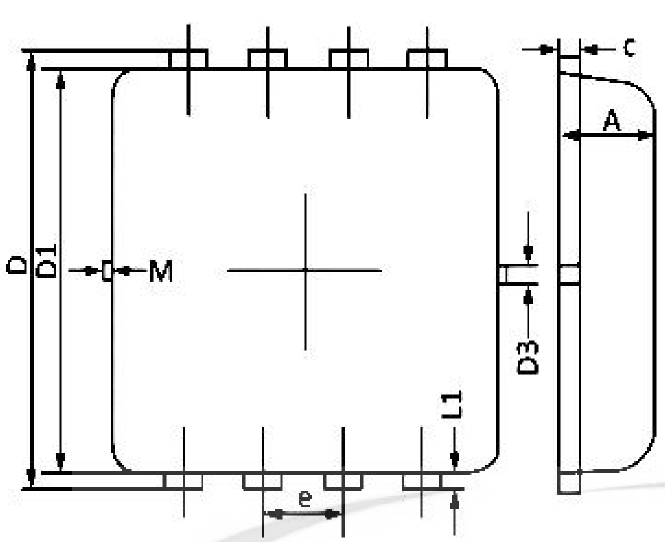
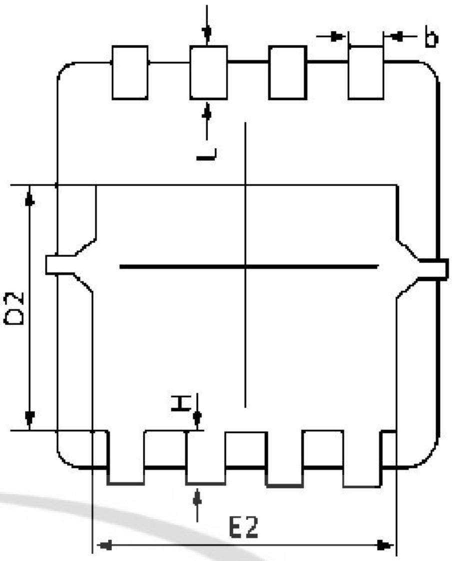


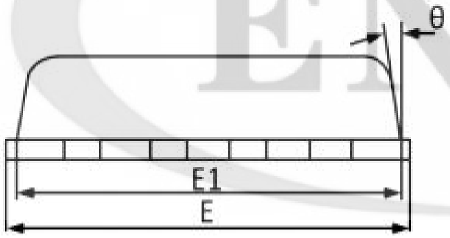
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case (PDFN3.3*3.3-8L)



PDFN3X3 Package Outline Dimesions







DIMENSIONS(unit:mm)

Symbol	Min	Typ	Max	Sybol	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	
θ		10°	12°	**M**	★	★	0.15