



ER100N03D

30V N-Channel MOSFET

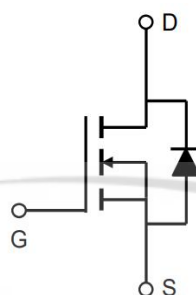
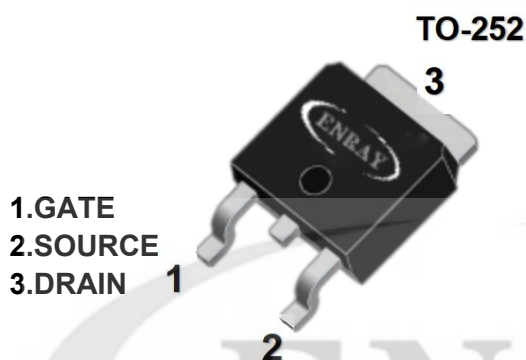
Features

The ER100N03D is the high cell density trench N ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The DS100N03D meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
30V	3.5mΩ	100A



Maximum Ratings(Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	30	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current,VGS @10V ¹	ID@TC=25°C	100	A
Continuous Drain Current,VGS @10V ¹	ID@TC=100°C	65	
Pulsed Drain Current ①	IDM	400	
Single Pulse Avalanche Energy	EAS	95	mJ
Power Dissipatio	PD	80	W
Thermal Resistance Junction-Case	RθJC	1.9	°C/W
Operating Junction	TJ	-55~+175	°C
Storage Temperature	TSTG	-55~+175	°C

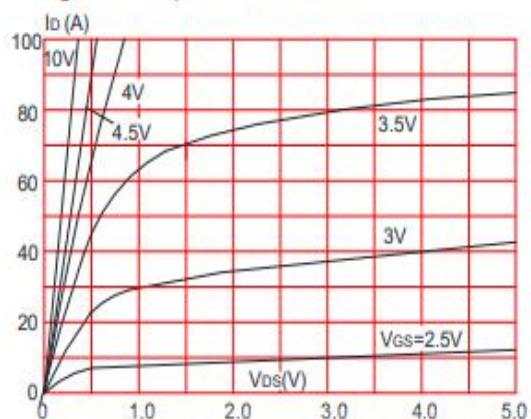
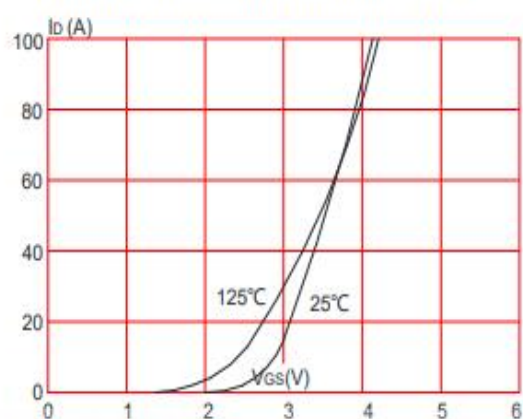
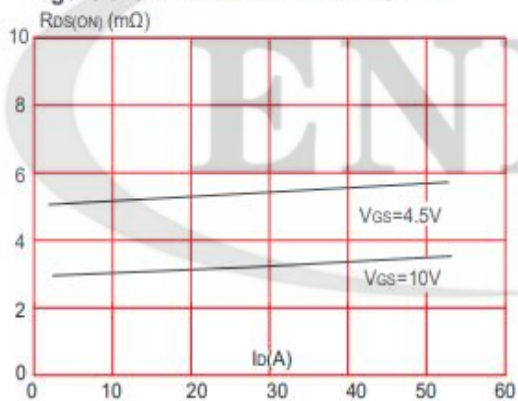
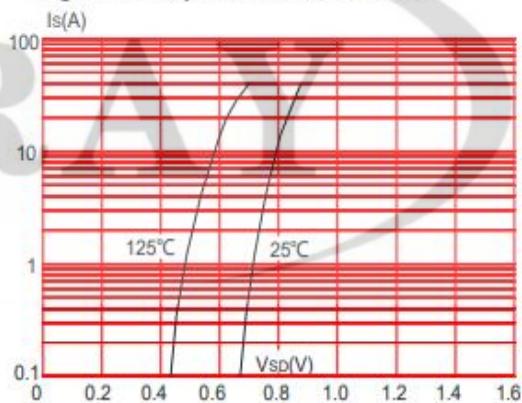
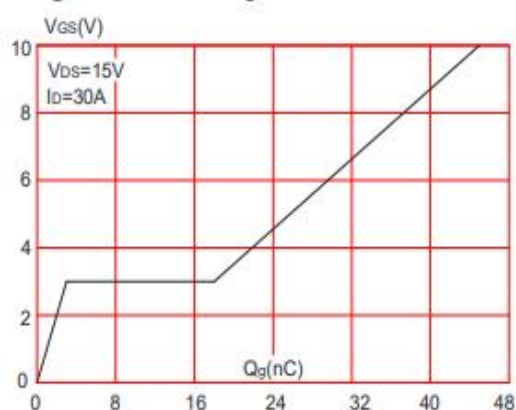
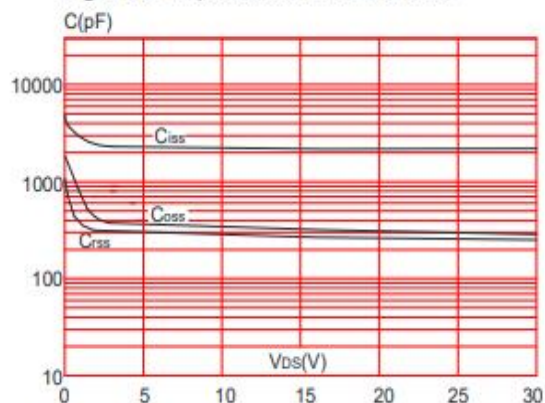


ER100N03D

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
Gate Threshold Voltage	VGS(th)	VDS =VGS, ID = 250μA	1.0	1.5	2.5	V
Gate-Body leakage Current	IGSS	VDS =0V, VGS = ±12V			±100	nA
Zero Gate Voltage Drain Current	IDSS	VDS = 30V, VGS =0V			1	μA
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 30A		3.5	4.7	mΩ
	RDS(on)	VGS = 4.5V, ID = 20A		5.5	10	mΩ
Dynamic Parameters ④						
Input Capacitance	Ciss	VDS=15V, VGS=0V, f=1.0MHz		2100		pF
Output Capacitance	Coss			326		pF
Reverse Transfer Capacitance	Crss			282		pF
Total Gate Charge	Qg	VDS =15V, ID =30A, VGS =10V		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 =10V		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, ISD=30A, TJ=25℃			1.2	V
Reverse Recovery Time	trr	TJ=25℃, IF=20A, di/dt =100A/μs		15		ns
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

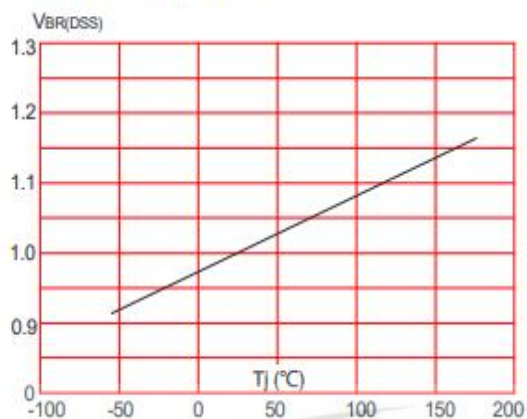


Figure 8: Normalized on Resistance vs. Junction Temperature

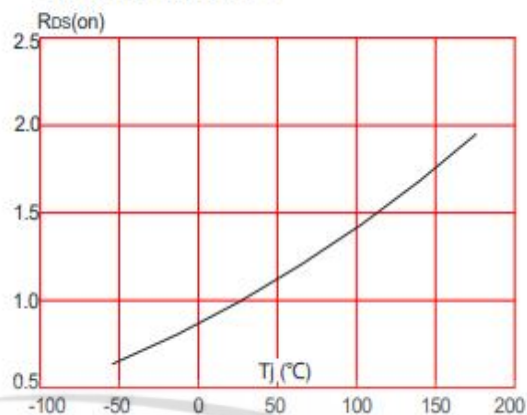


Figure 9: Maximum Safe Operating Area

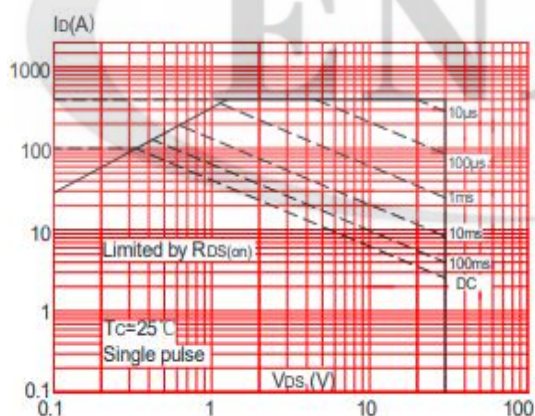


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

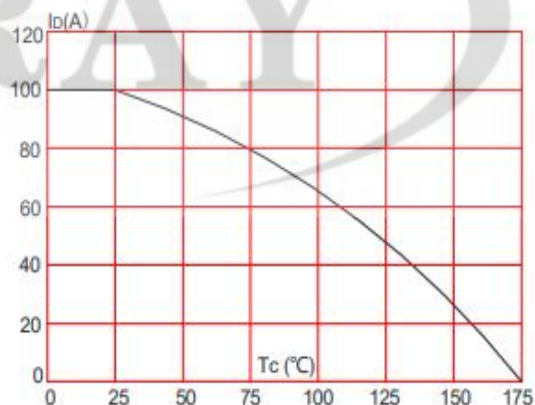
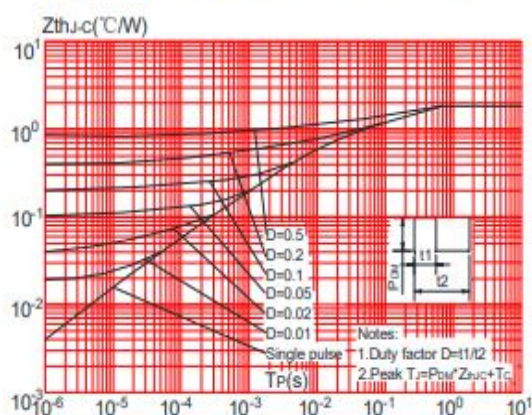
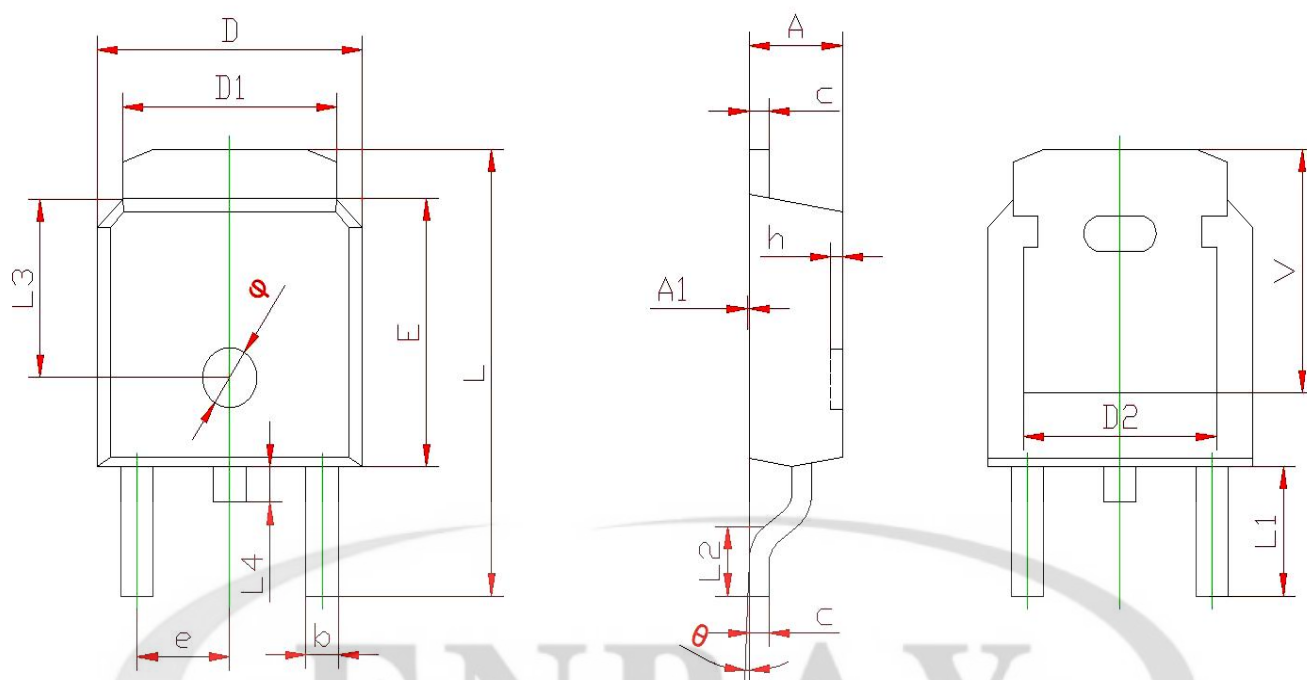


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TO-252 Package Outline Dimesions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.800 REF		0.189 REF	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF		0.114 REF	
L2	1.400	1.700	0.055	0.067
L3	4.000REF		0.157 REF	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.5000REF		0.217 REF	