Features

★ Super Low Gate Charge
★ Green Device Available
★ Excellent Cdv/dt effect decline
★ Advanced high cell density Trench technology
★ 100% EAS Guaranteed

Product Summary

RoHS

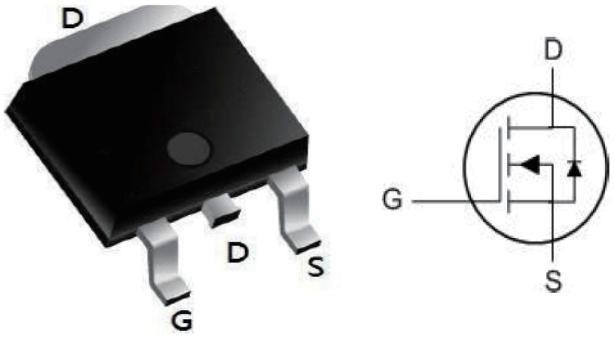
BVDSS	RDSON	ID
100V	32mΩ	30A

Description

The 30N10 is the highest performance trench Nc-h MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The 30N10 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 10V[1]	30	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ 10V[1]	15	A
I_{DM}	Pulsed Drain Current[2]	80	A
EAS	Single Pulse Avalanche Energy[3]	4 0	mJ
I_{AS}	Avalanche Current	30	A
P_D@T_C=25°C	Total Power Dissipation[3]	43.7	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case [1]	---	3.0	°C/W

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter		Test condition	Min.	Typ.	Max.	Units
Static Characteristics							
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		V_{GS} = 0V, I_D = 250μA	100	-	-	V
I_{GSS}	Gate-body Leakage current		V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	T_J=25°C	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
		T_J=100°C		-	-	100	
$V_{GS(th)}$	Gate-Threshold Voltage		V_{DS} = V_{GS}, I_D = 250μA	1.2	-	2.5	V
$R_{DS(on)}$	Drain-Source on-Resistance[4]		V_{GS} = 10V, I_D = 5A	-	32	45	mΩ
			V_{GS} = 4.5V, I_D = 3A	-	38	75	
g_{fs}	Forward Transconductance [4]		V_{DS}=5V , I_D=5A	-	12	-	S
Dynamic Characteristics [5]							
C_{iss}	Input Capacitance		V_{DS} = 15V, V_{GS} =0V,f =1MHz	-	2420	-	pF
C_{oss}	Output Capacitance			-	99	-	
C_{rss}	Reverse Transfer Capacitance			-	84	-	
R_g	Gate Resistance		f =1MHz	-	1.3	-	Ω
Switching Characteristics[5]							
Q_g	Total Gate Charge		V_{GS} = 10V, V_{DS} = 50V, I_D=5A	-	40.6	-	nC
Q_{gs}	Gate-Source Charge			-	8	-	
Q_{gd}	Gate-Drain Charge			-	6.7	-	
$t_{d(on)}$	Turn-On Delay Time		V_{GS} =10V, V_{DD} =50V, R_G = 3Ω, I_D= 5A	-	8.7	-	ns
t_r	Rise Time			-	41	-	
$t_{d(off)}$	Turn-Off Delay Time			-	40	-	
t_f	Fall Time			-	32	-	
Drain-Source Body Diode Characteristics							
V_{SD}	Diode Forward Voltage[4]		I_S = 1A, V_{GS} = 0V	-	-	1.2	V
I_S	Continuous Source Current	TC=25°C	-	-	-	30	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature TJ(MAX)=150°C.

2.The data tested by pulsed , pulse width ⩽ 300us , duty cycle ⩽ 2%

3.The EAS data shows Max. rating . The test condition is VDD=25V,VGS=10V,L=0.1mH,IAS=8A.

4.The power dissipation is limited by 150°C junction temperature.

5.The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Electrical and Thermal Characteristics (Curves)

Figure1: Output Characteristics

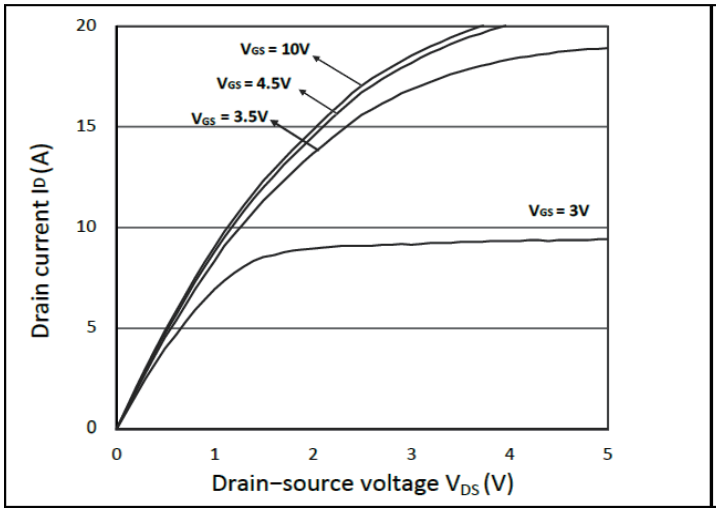


Figure 2: Typical Transfer Characteristics

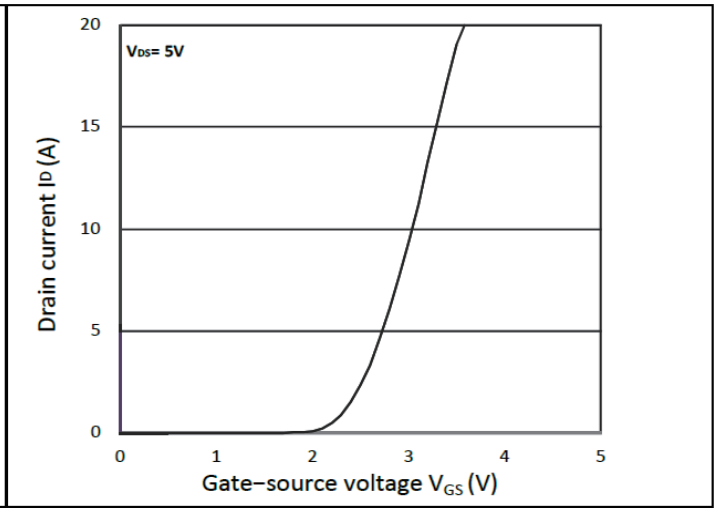


Figure 3:Forward Characteristics of Rever

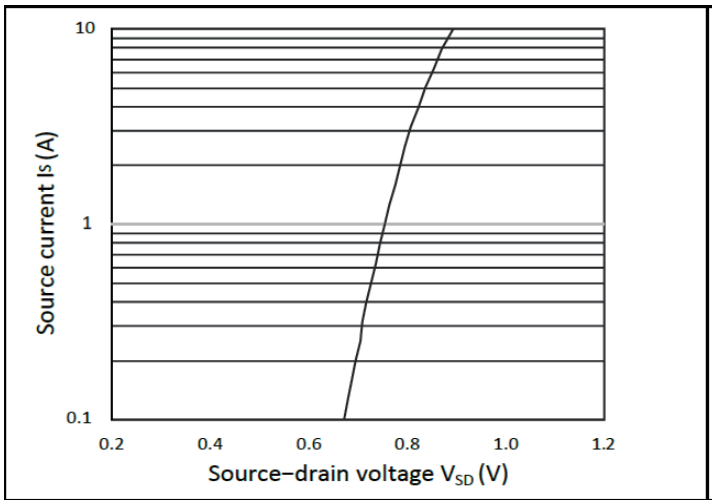


Figure 4: RDS(ON) vs. VGS

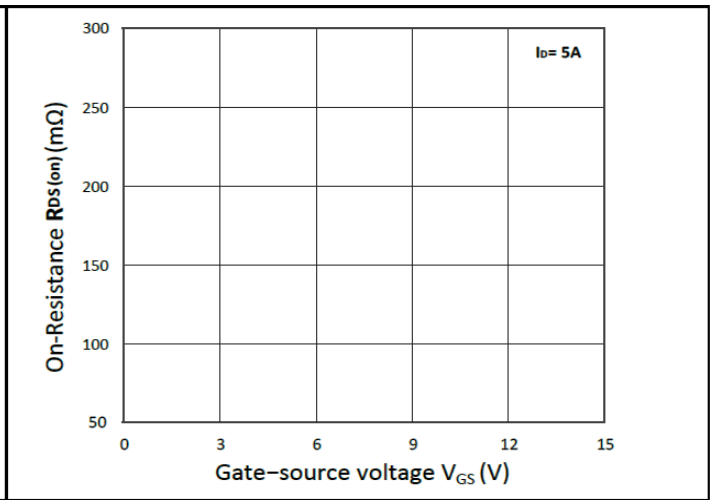


Figure 5: RDS(ON) vs. ID

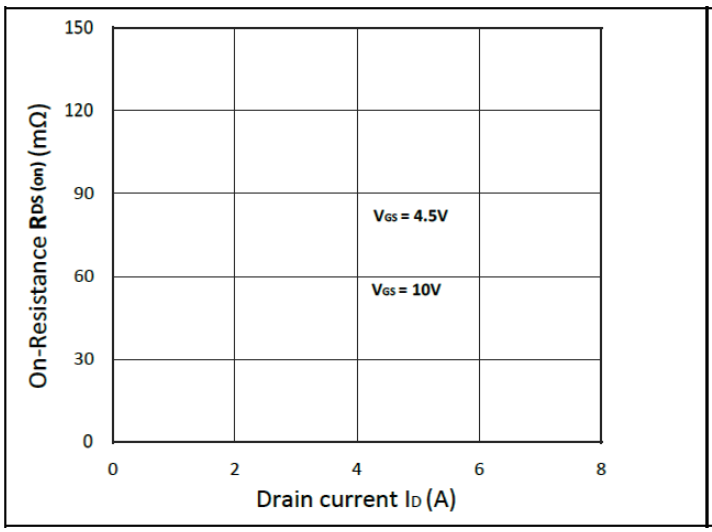
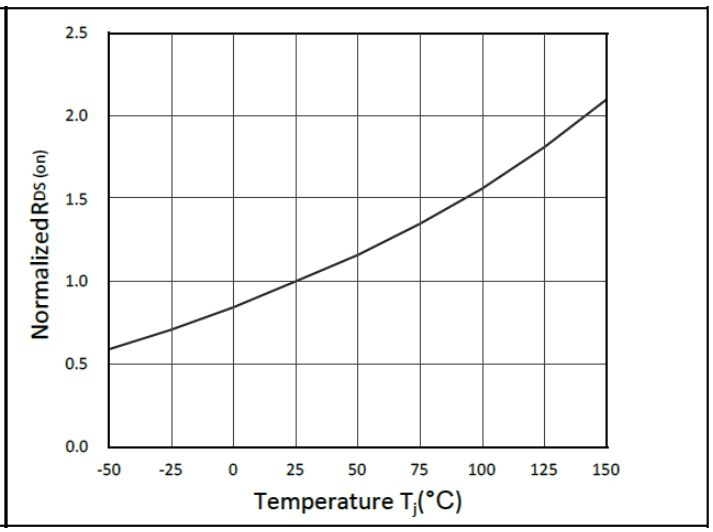


Figure 6:Normalized RDS(on) vs. Tempe



Typical Performance Characteristics

Figure 7:Capacitance Characteristics

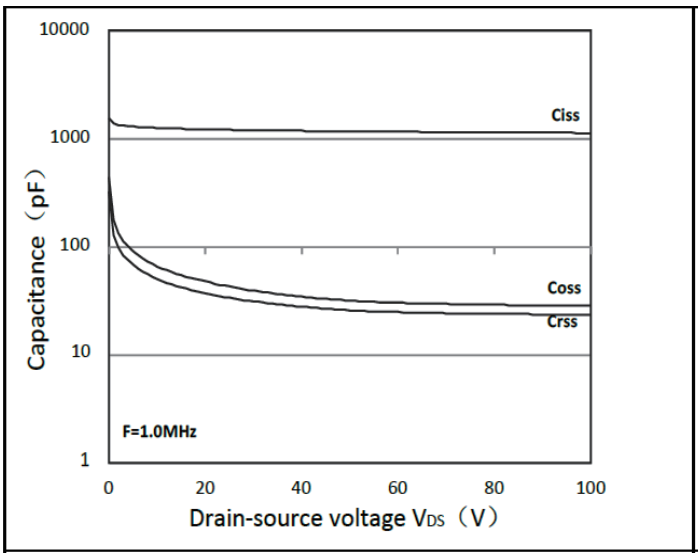


Figure 8:Gate Charge Characteristics

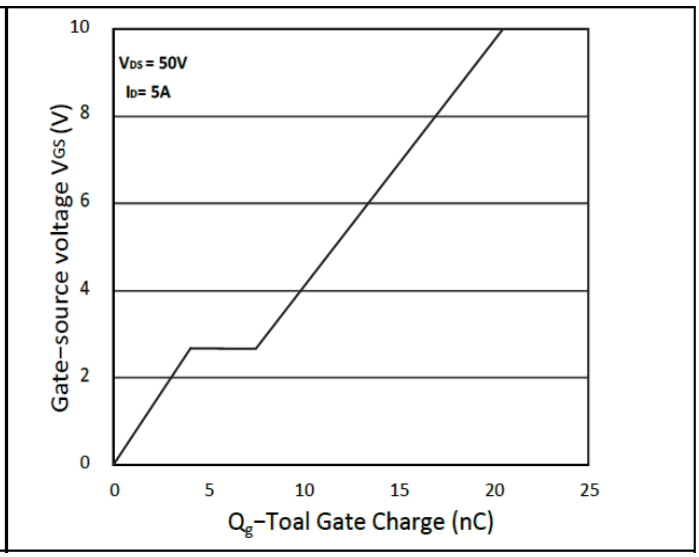


Figure 9:Power Dissipation

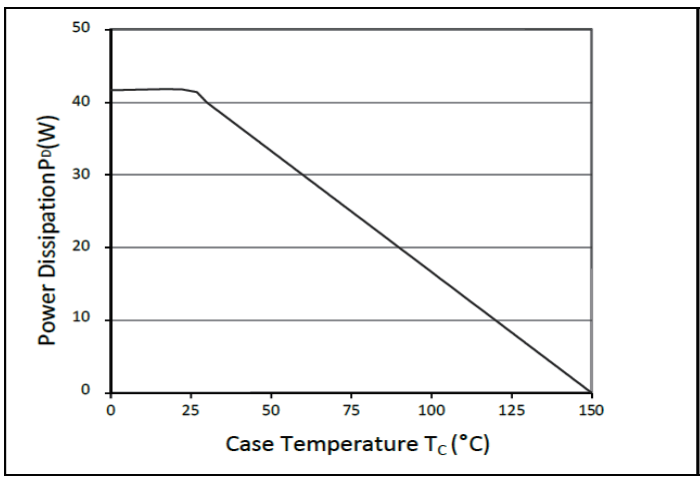


Figure 10:Safe Operating Area

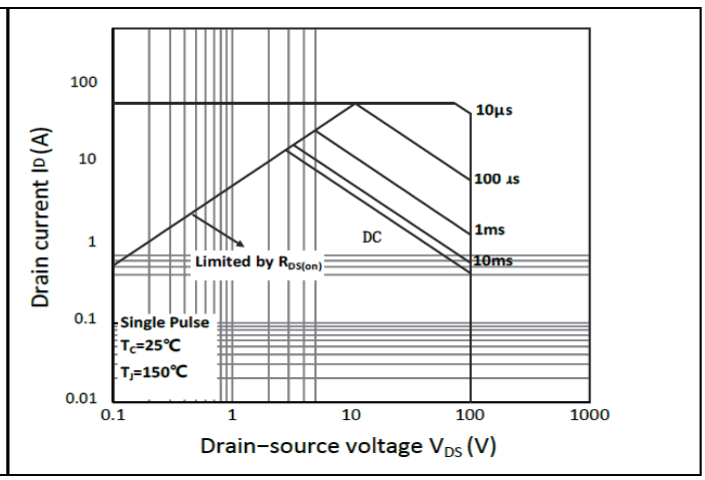
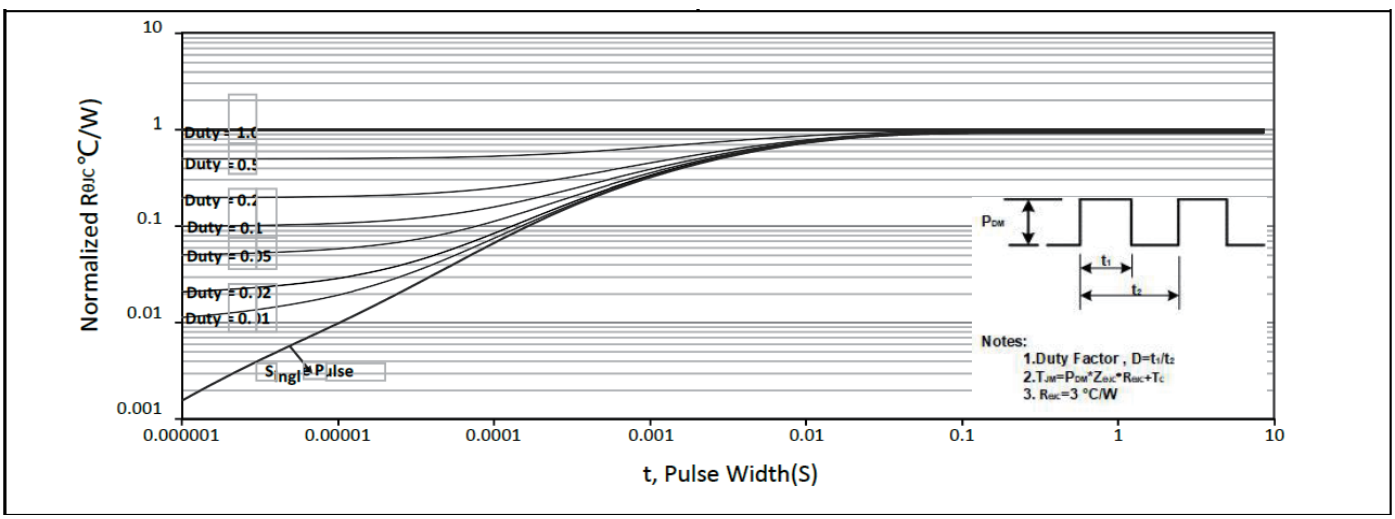
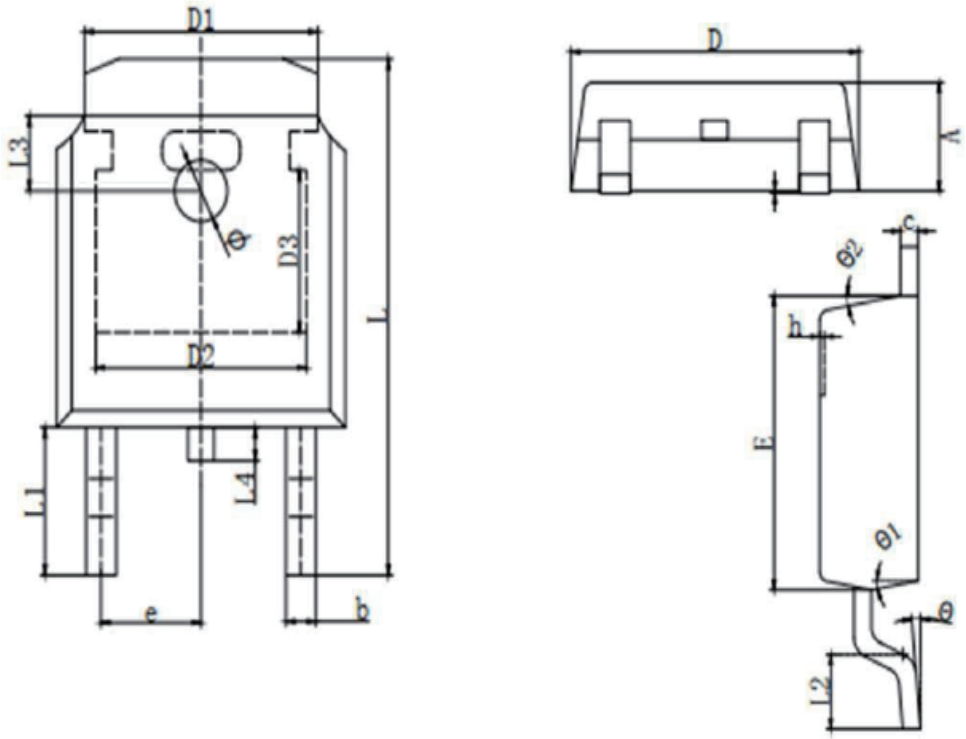


Figure 11:Normalized Maximum Transien



TO-252 Package outline



Symbol	MILLMETER		Symbol	MILLMETER	
	MIN	MAX		MIN	MAX
A	2.200	2.400	h	0.000	0.200
A1	0.000	0.127	L	9.900	10.30
b	0.640	0.740	L1	2.888REF	
c	0.460	0.580	L2	1.400	1.700
D	6.500	6.700	L3	1.600REF	
D1	5.334REF		L4	0.600	1.000
D2	4.826REF		∅	1.100	1.300
D3	3.166REF		θ	0°	8°
E	6.00	6.200	θ_1	9° TYP2	
e	2.286TYP		θ_2	9° TYP	

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