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

Product Summary

RoHS

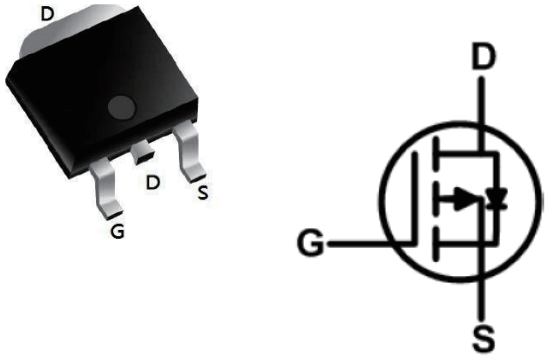
BVDSS	RDSON	ID
-100V	80mΩ	-20A

Description

The 20P10 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 20P10 meet the RoHS and Green Product, requirement 100% EAS guaranteed with full function reliability approved.

TO252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter		Max.	Unit
V_{DSS}	Drain-Source Voltage		-100	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	-20	A
		T_C = 100℃	-11	A
I_{DM}	Pulsed Drain Current note1		-72	A
EAS	Single Pulsed Avalanche Energy note2		132.25	mJ
P_D	Power Dissipation	T_C = 25℃	70	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.78	℃/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient 1		75	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to 150	℃

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	-	-	-100	μA
		T_J=100°C		-	-	-1	
$V_{GS(th)}$	Gate-Threshold Voltage		V_{DS} = V_{GS}, I_D = -250μA	-1	-1.8	-2.5	V
$R_{DS(on)}$	Drain-Source on-Resistance[4]		V_{GS} = -10V, I_D = -10A	-	80	100	mΩ
			V_{GS} = -4.5V, I_D =-6A	-	88	120	S
g_{fs}	Forward Transconductance[4]		V_{DS} = -10V, I_D = -10A	-	30	-	
Dynamic Characteristics[5]							
C_{iss}	Input Capacitance		V_{DS} =-50V, V_{GS} =0V, f =1MHz	-	3985	-	pF
C_{oss}	Output Capacitance			-	85	-	
C_{rss}	Reverse Transfer Capacitance			-	71	-	
R_G	Gate Resistance		f =1MHz	-	4	-	Ω
Switching Characteristics[5]							
Q_g	Total Gate Charge		V_{GS} = -10V, V_{DD} =-50V, I_D= -10A	-	65	-	nC
Q_{gs}	Gate-Source Charge			-	10.2	-	
Q_{gd}	Gate-Drain Charge			-	13	-	
$t_{d(on)}$	Turn-on Delay Time		V_{GS} =-10V, V_{DD} =-50V, R_G = 3Ω, I_D= -10A	-	12.8	-	ns
t_r	Rise Time			-	30	-	
$t_{d(off)}$	Turn-off Delay Time			-	82	-	
t_f	Fall Time			-	61	-	
t_{rr}	Body Diode Reverse Recovery Time		I_F=-10A, dI_F/dt=100A/μs	-	62	-	
Q_{rr}	Body Diode Reverse Recovery Charge			-	56	-	nC
Drain-Source Body Diode Characteristics							
V_{SD}	Diode Forward Voltage[4]		I_S = -10A, V_{GS} = 0V	-	-	-1.2	V
I_S	Continuous Source Current	T_C=25°C	-	-	-	-20	A

Note :
1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD}= -35V, V_{GS}= -10V, L= 0.5mH, IAS= -23A
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test..

P-Channel Typical Characteristics

Figure1: Output Characteristics

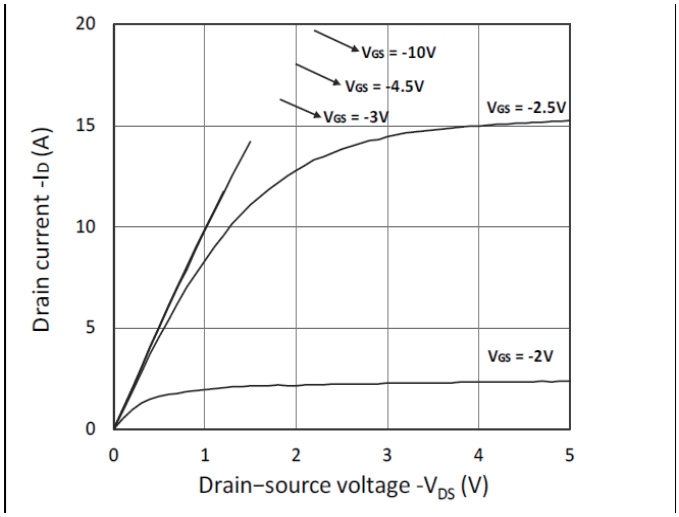


Figure 2: On-Resistance vs. G-S Voltage

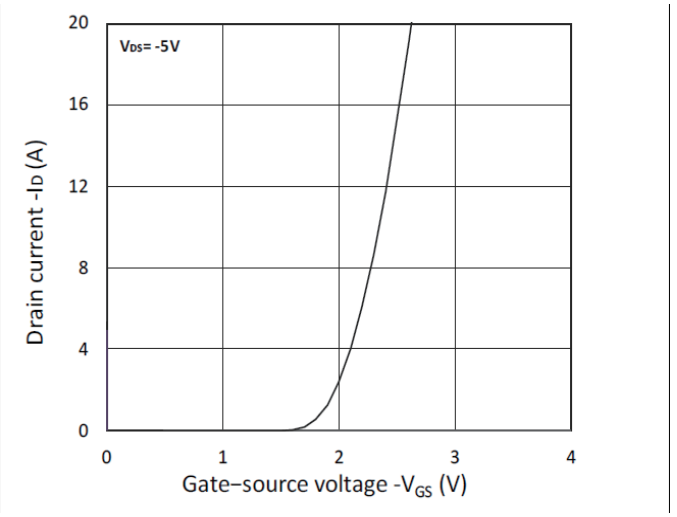


Figure 3:Forward Characteristics Of Reve

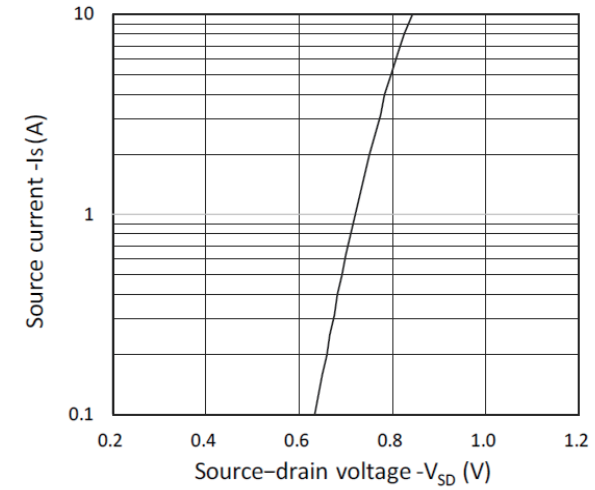


Figure 4: Gate-Charge Characteristics

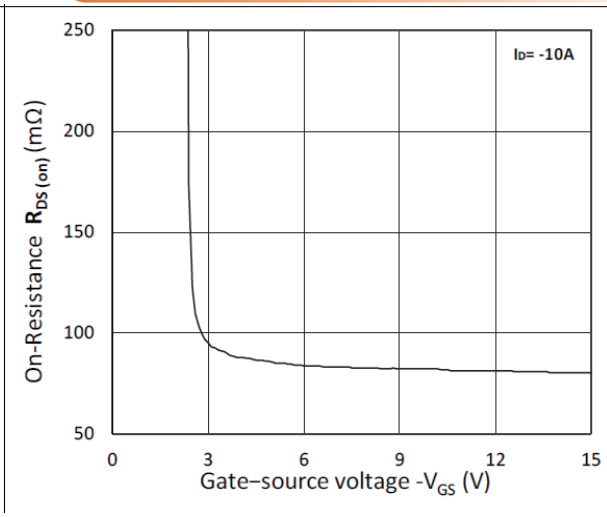


Figure 5: Normalized VGS(th) vs. TJ

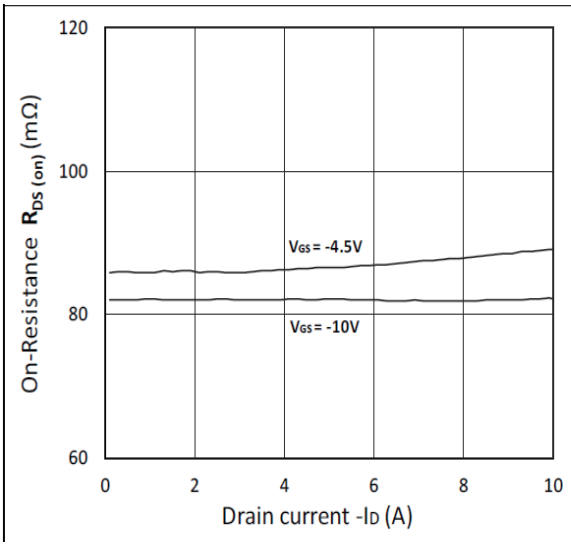
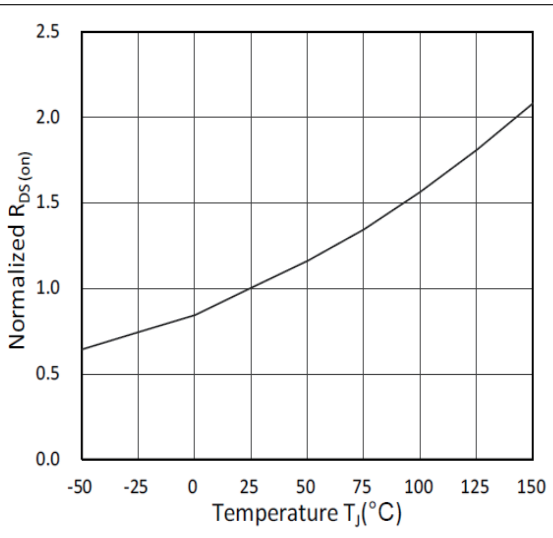


Figure 6: Normalized RDSON vs. TJ



Typical Performance Characteristics

Figure 7: Capacitance Characteristics

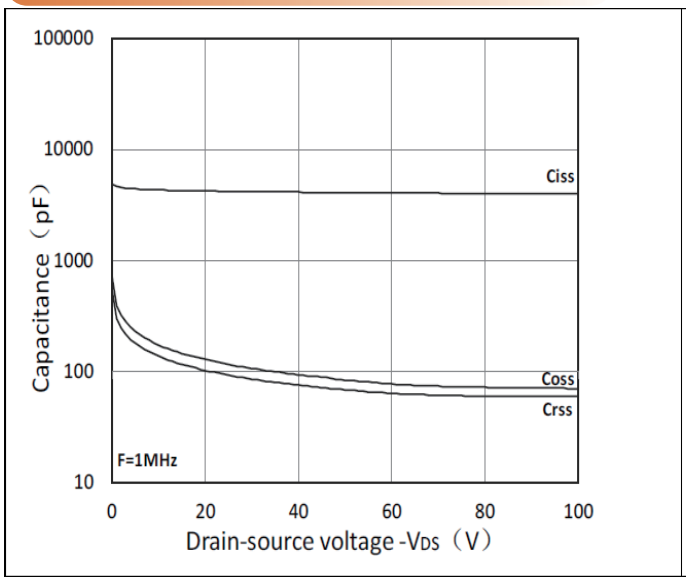


Figure 8: Gate Charge Characteristics

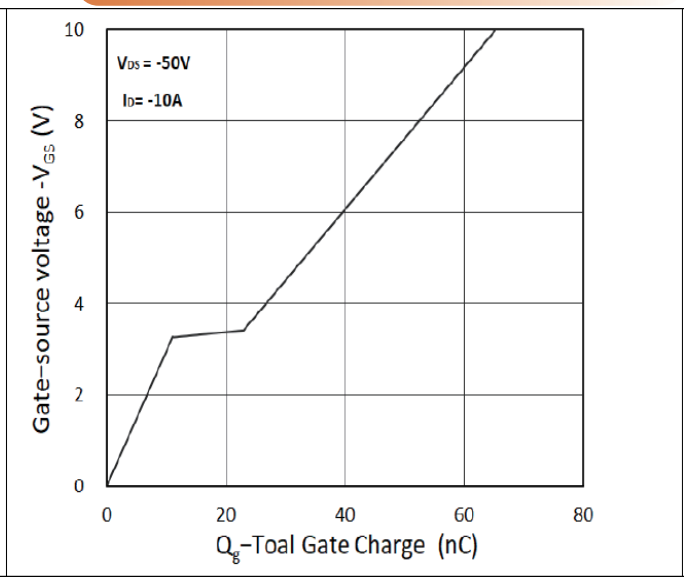


Figure 9: Power Dissipation

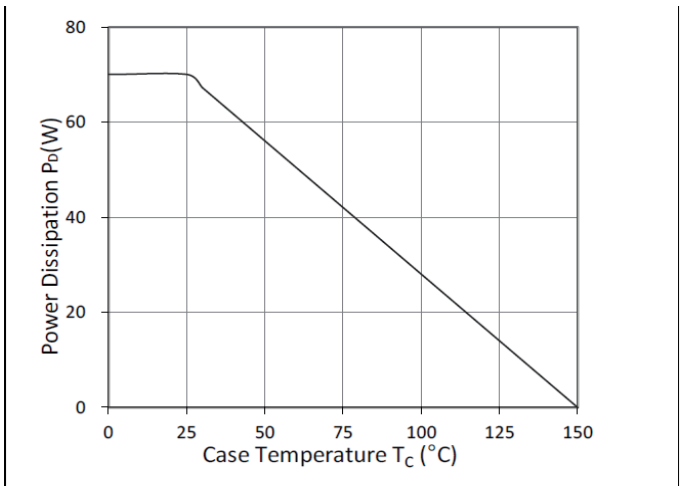


Figure 10:Safe Operating Area

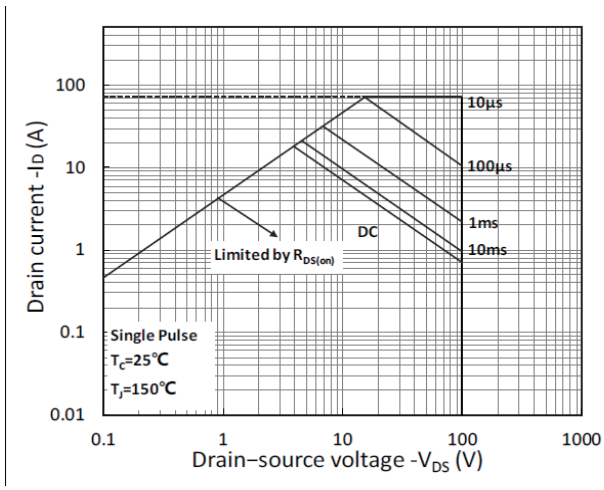
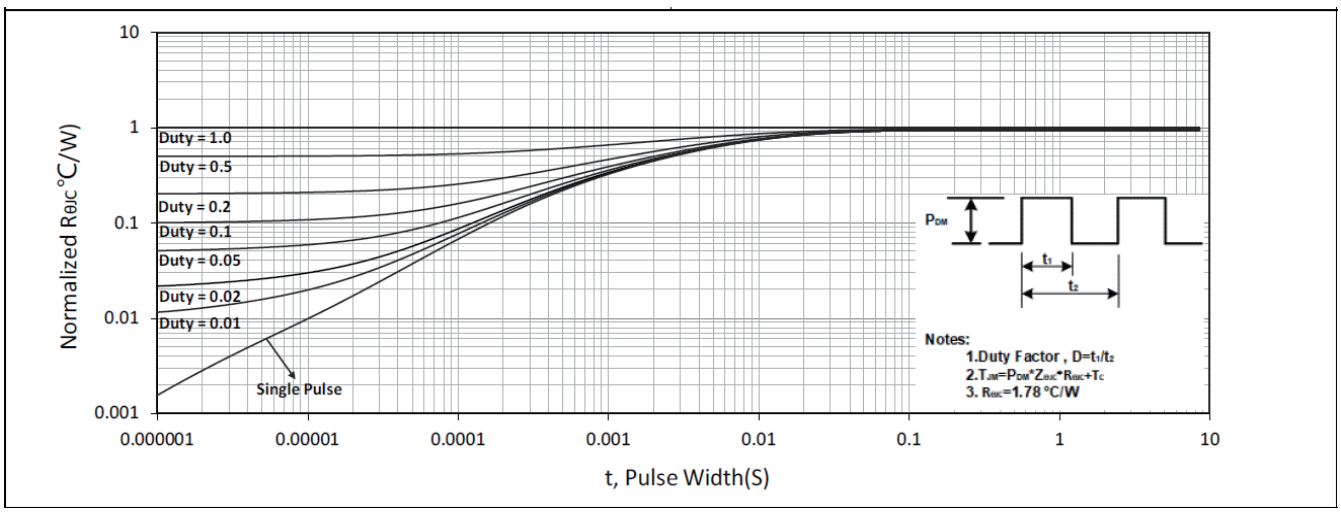
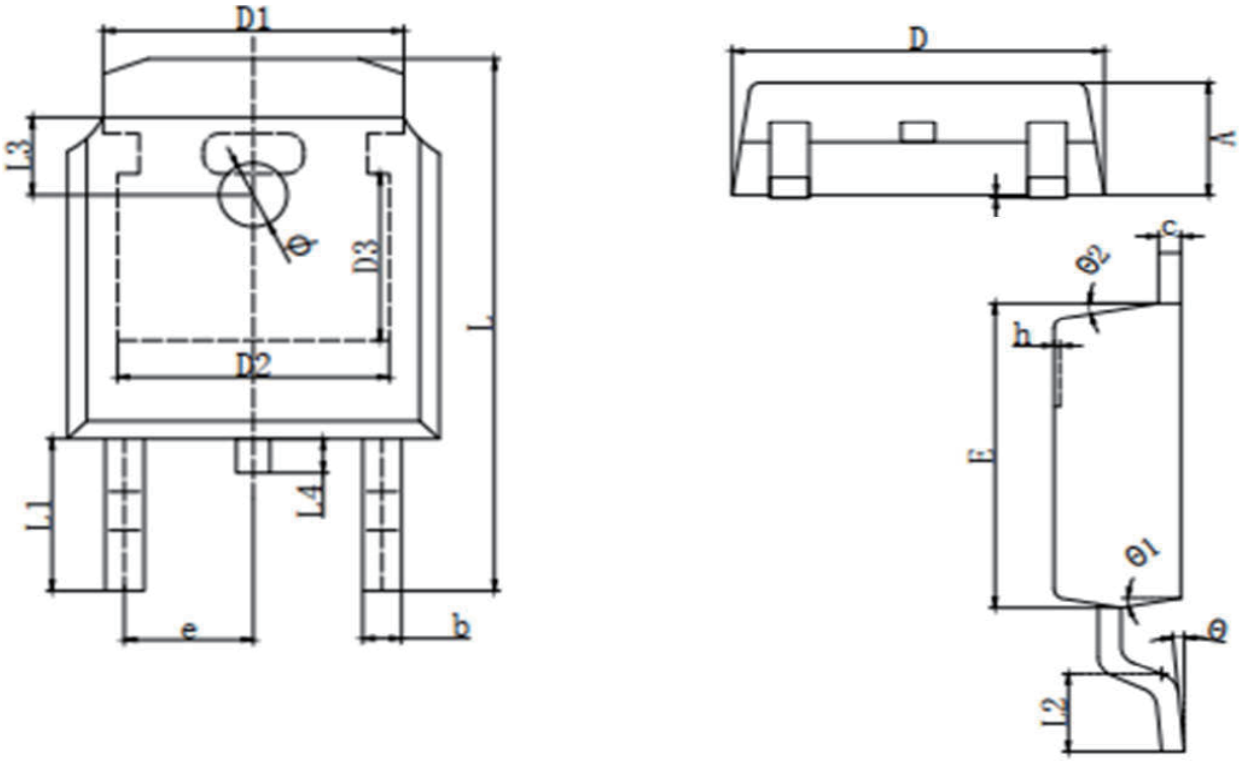


Figure 11:Normalized Maximum Transien



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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