

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

Product Summary

RoHS

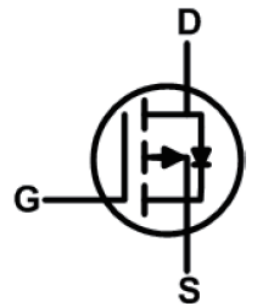
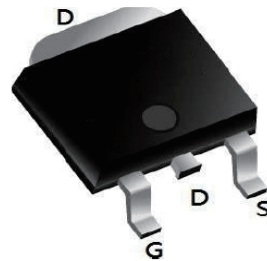
BVDSS	RDSON	ID
-30V	36mΩ	-20A

Description

The 20P03 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The 20P03 meet the RoHS and Green Product requirement with full function reliability approved.

TO252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter		Max.	Units
V _{DSS}	Drain-Source Voltage		-30	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _C = 25°C	-20	A
		T _C = 100°C	-13	A
I _{DM}	Pulsed Drain Current note1		-30	A
EAS	Single Pulsed Avalanche Energy note2		15	mJ
P _D	Power Dissipation	T _C = 25°C	19	W
R _{θJA}	Thermal Resistance, Junction to Ambient		5.2	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +175	°C

Electrical Characteristics ($T_J = 25^\circ\text{C}$ 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	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -30V, V _{GS} = 0V	-	-	-1	μA
I _{GSS}	Gate-Source Leakage	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
V _{GS(th)}	Gate-Source Threshold voltage	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-2.5	V
R _{DS(on)}	Drain-Source on-State Resistance ³	V _{GS} = -10V, I _D = -4.1A	-	36	50	mΩ
		V _{GS} = -4.5V, I _D = -3A	-	49	75	mΩ
Dynamic Characteristics ⁴						
C _{iss}	Input Capacitance	V _{GS} = 0V , V _{DS} = -15V, f = 1.0MHz	-	530	-	pF
C _{oss}	Output Capacitance		-	70	-	pF
C _{rss}	Reverse Transfer Capacitance		-	56	-	pF
Switching Characteristics ⁴						
Q _g	Total Gate Charge	V _{GS} = -10V, V _{DS} = -15V, I _D = -4.1A	-	6.8	-	nC
Q _{gs}	Gate-Source Charge		-	1	-	nC
Q _{gd}	Gate-Drain Charge		-	1.4	-	nC
t _{d(on)}	Turn-on Delay Time		-	14	-	nC
t _r	Rise Time	V _{GS} = -10V, V _{DS} = -15V , R _L = 15Ω,R _{GEN} = 2.5Ω	-	61	-	ns
t _{d(off)}	Turn-off Delay time		-	19	-	ns
t _f	Fall Time		-	10	-	ns
Source-Drain Body Diode Characteristics						
V _{SD}	Diode Forward Voltage ³	I _S = -4.1A, V _{GS} = 0V	-	-	-1.2	V
I _S	Continuous Source Current		-	-	-20	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ\text{C}$.
2. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. This value is guaranteed by design hence it is not included in the production test.

Typical Performance Characteristics

Figure1: Output Characteristics

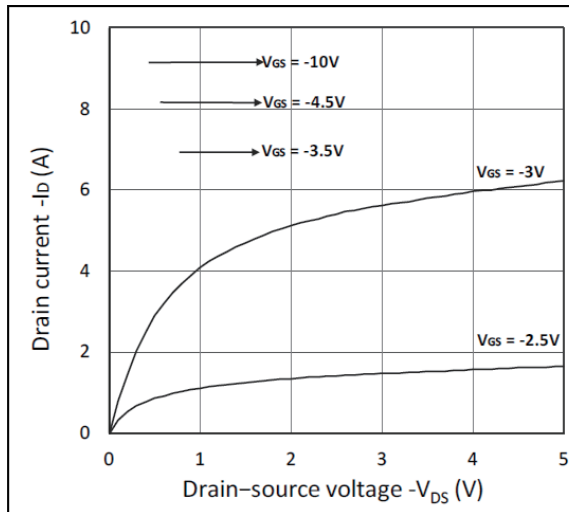


Figure 2: Transfer Characteristics

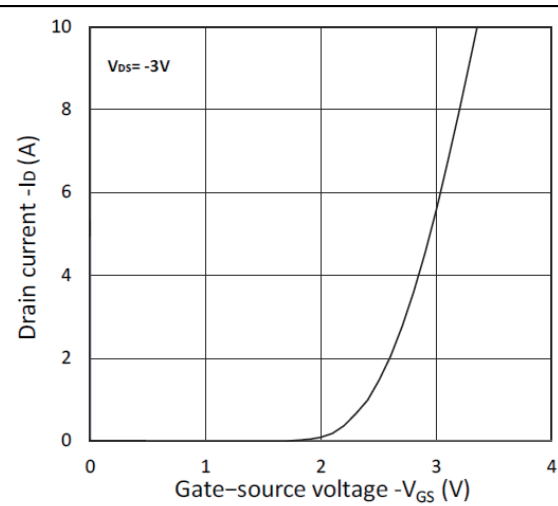


Figure 3: Forward Characteristics of Reverse

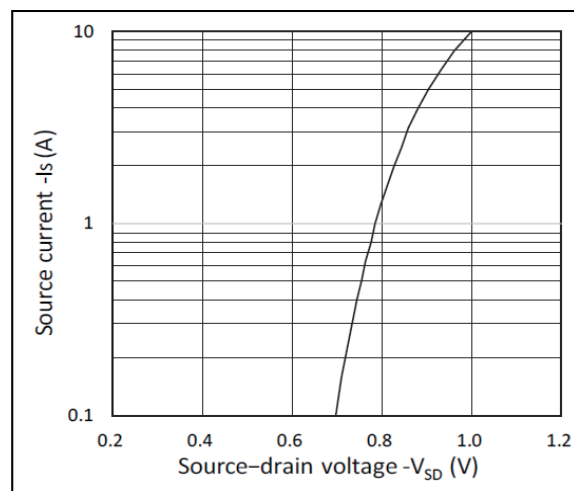


Figure 4: R_DS(ON) vs. V_GS

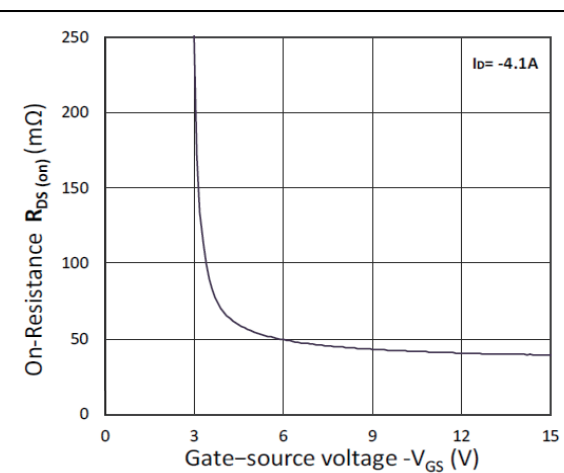


Figure 5: R_DS(ON) vs. I_D

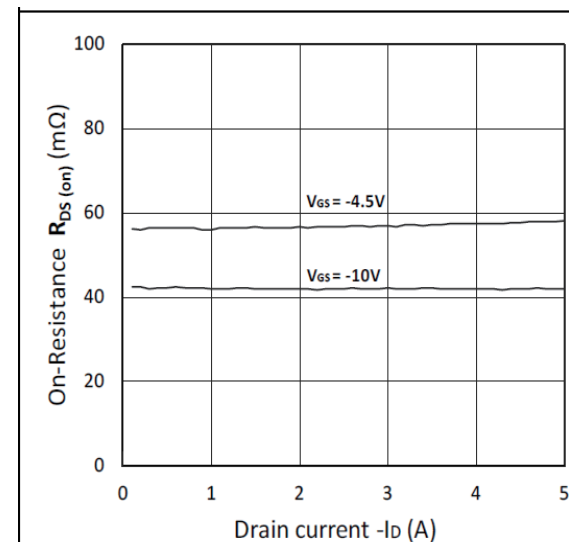
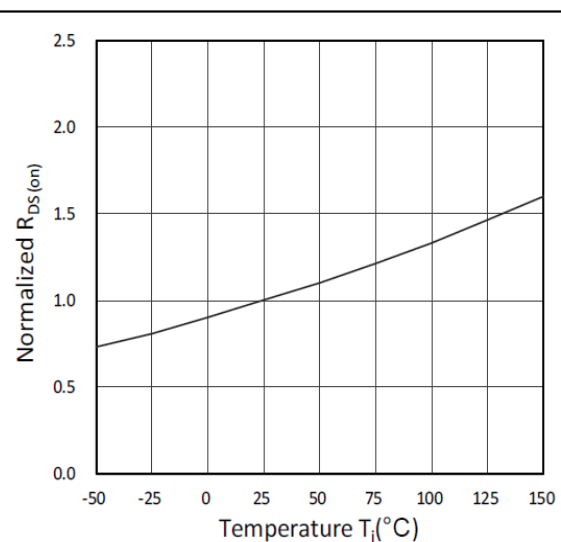


Figure 6: Normalized R_DS(on) vs. Temperature



Typical Performance Characteristics

Figure 7: Capacitance Characteristics

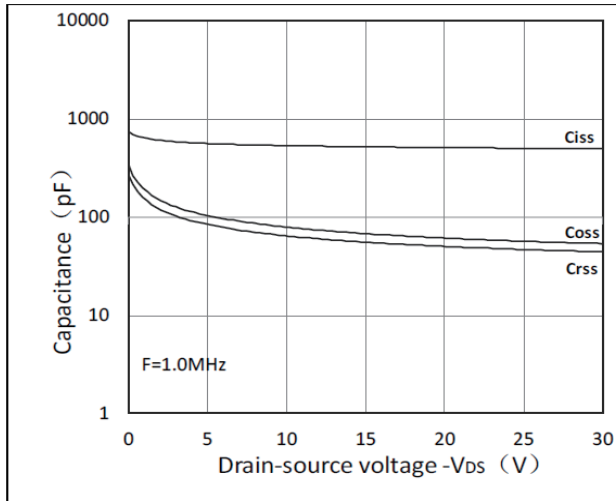
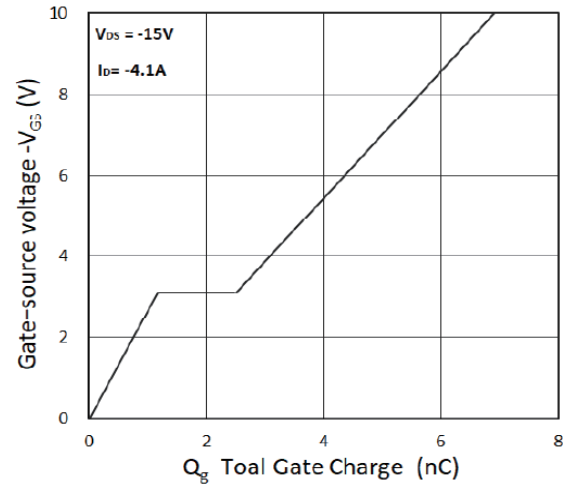
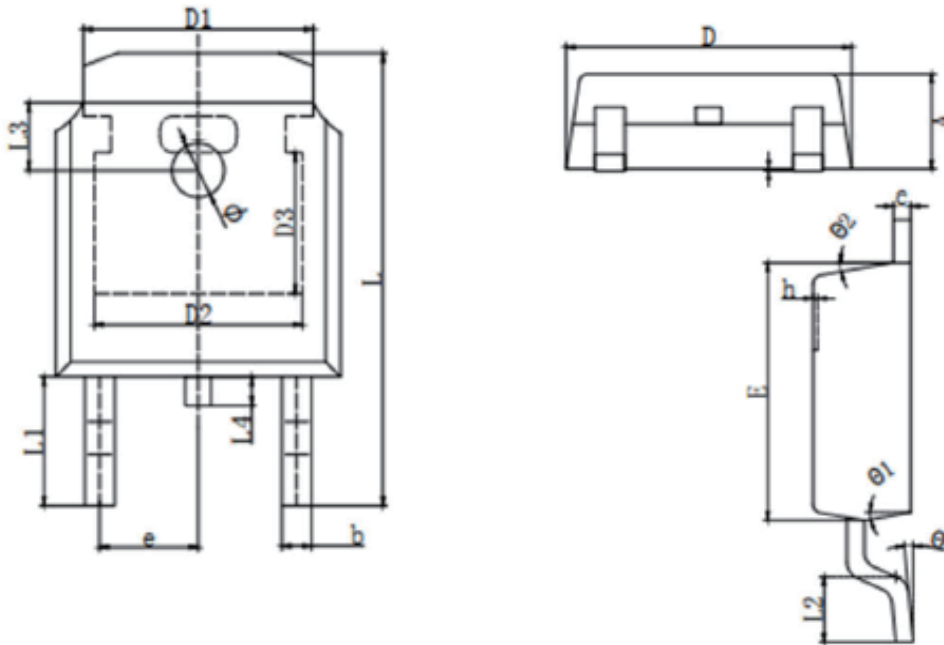


Figure 8: Gate Charge Characteristics



TO-252 Package outline

TO-252 Package outline



SYMBOL	MILLIMETER		SYMBOL	MILLIMETER	
	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	2.888 REF	
c	0.460	0.580	L2	1.400	1.700
D	6.500	6.700	L3	1.600 REF	
D1	5.334 REF		L4	0.600	1.000
D2	4.826 REF		φ	1.100	1.300
D3	3.166 REF		θ	0°	8°
E	6.000	6.200	θ1	9° TYP2	
e	2.286 TYP		θ2	9° TYP	