

P-Ch 30V Fast Switching MOSFETs

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

Product Summary

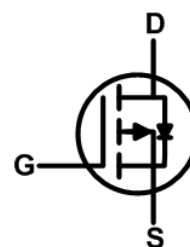
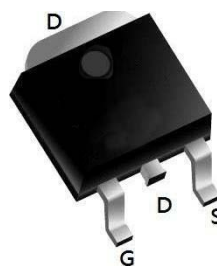


BVDSS	RDSON	ID
-30V	36mΩ	-20 A

Description

The XR20P03 is the high cell density trenched P-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications. The XR20P03 meet the RoHS and Green Product requirement with full function reliability approved.

TO252-3L Pin Configuration

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	-20	A
		$T_C = 100^\circ\text{C}$	-13	A
I_{DM}	Pulsed Drain Current ^{note1}		-30	A
EAS	Single Pulsed Avalanche Energy ^{note2}		15	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	19	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		5.2	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ\text{C}$

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -30V, V _{GS} = 0V	-	-	-1	μA
Gate-Source Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Gate-Source Threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1	-1.5	-2.5	V
Drain-Source on-State Resistance ³	R _{DS(on)}	V _{GS} = -10V, I _D = -4.1A	-	36	50	mΩ
		V _{GS} = -4.5V, I _D = -3A	-	49	75	
Dynamic Characteristics ⁴						
Input Capacitance	C _{iss}	V _{GS} = 0V , V _{DS} = -15V, f = 1.0MHz	-	530	-	pF
Output Capacitance	C _{oss}		-	70	-	
Reverse Transfer Capacitance	C _{rss}		-	56	-	
Switching Characteristics ⁴						
Total Gate Charge	Q _g	V _{GS} = -10V, V _{DS} = -15V, I _D = -4.1A	-	6.8	-	nC
Gate–Source Charge	Q _{gs}		-	1.0	-	
Gate–Drain Charge	Q _{gd}		-	1.4	-	
Turn-on Delay Time	t _{d(on)}	V _{GS} = -10V, V _{DS} = -15V , R _L = 15Ω,R _{GEN} = 2.5Ω	-	14	-	ns
Rise Time	t _r		-	61	-	
Turn-off Delay time	t _{d(off)}		-	19	-	
Fall Time	t _f		-	10	-	
Source-Drain Body Diode Characteristics						
Diode Forward Voltage ³	V _{SD}	I _S = -4.1A, V _{GS} = 0V	-	-	-1.2	V
Continuous Source Current	I _S		-	-	-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 2OZ 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 Characteristics

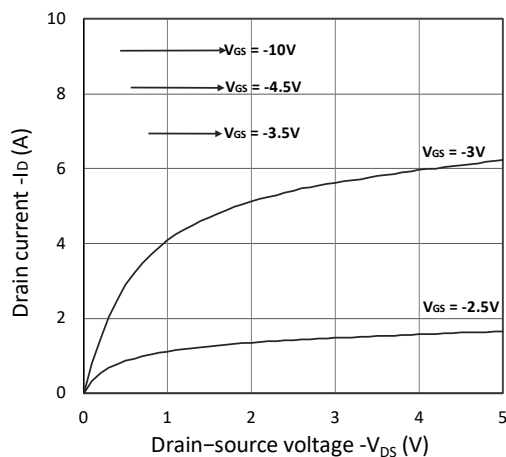


Figure 1. Output Characteristics

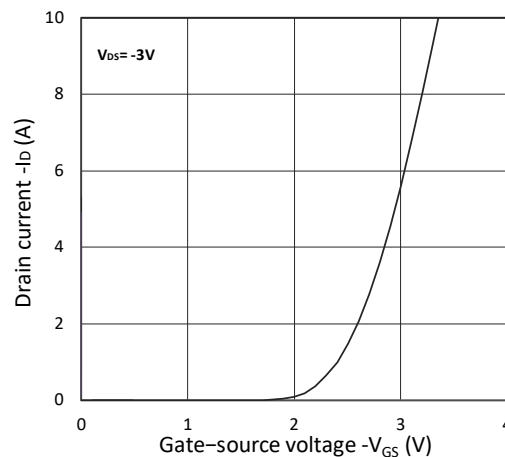


Figure 2. Transfer Characteristics

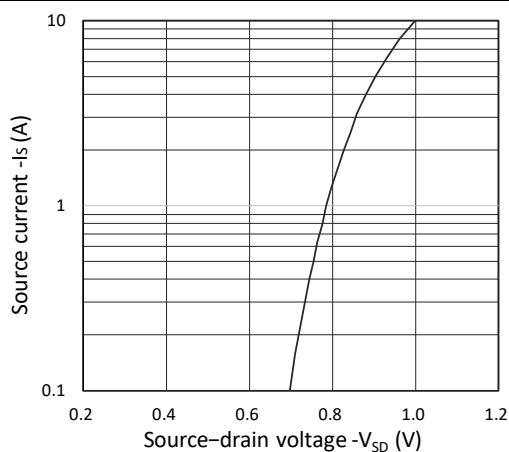
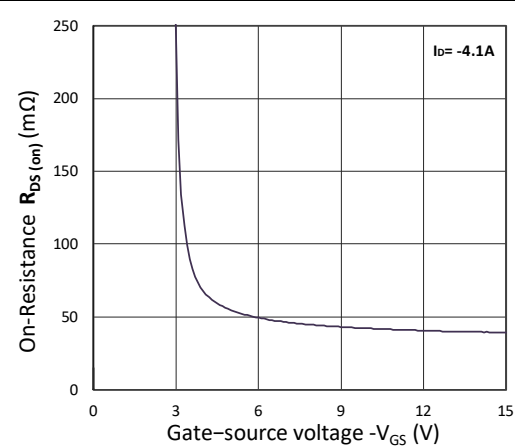
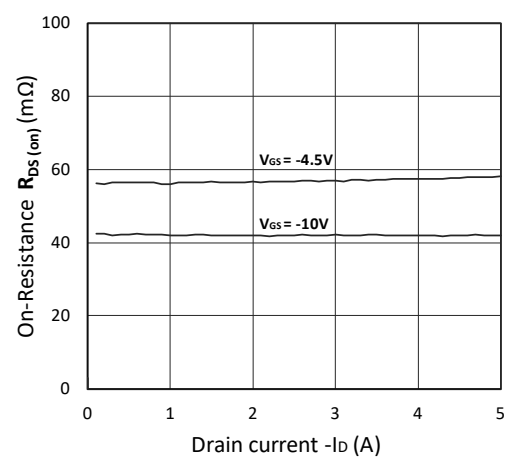
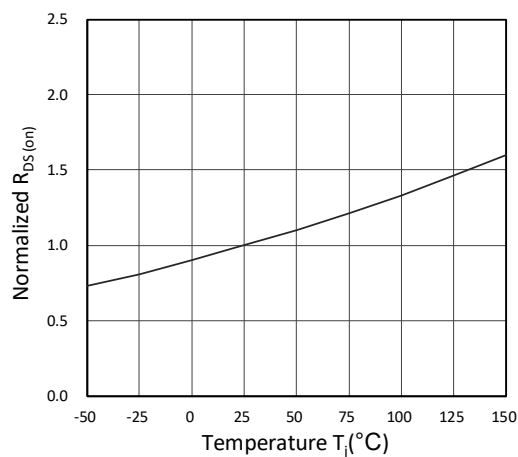
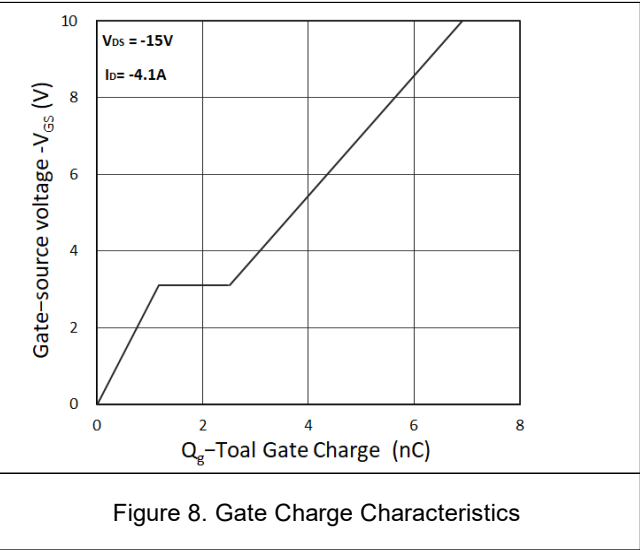
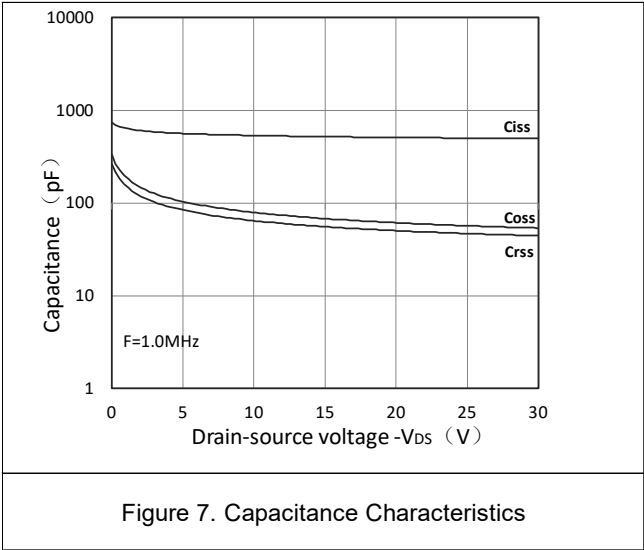
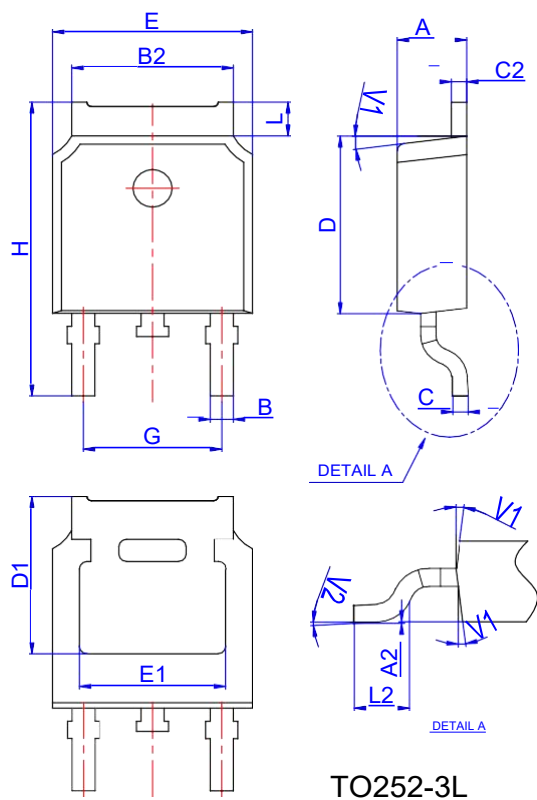


Figure 3. Forward Characteristics of Reverse

Figure 4. $R_{DS(ON)}$ vs. V_{GS} Figure 5. $R_{DS(ON)}$ vs. I_D Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

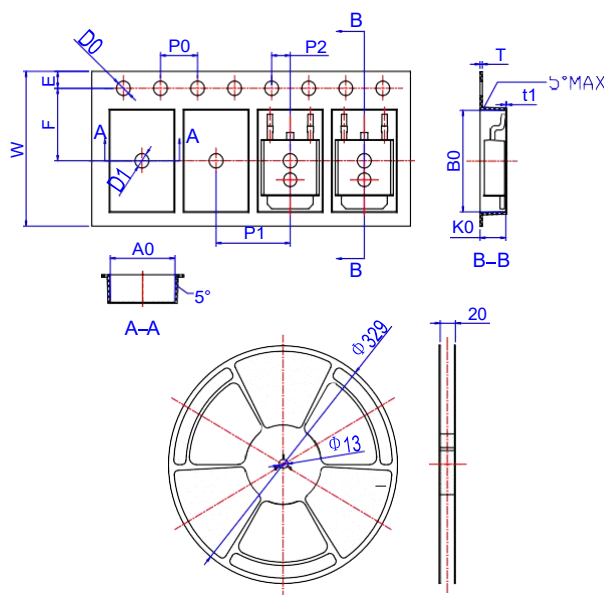


Package Mechanical Data TO252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Spectification-TO252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583