

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

Product Summary

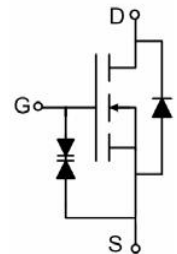
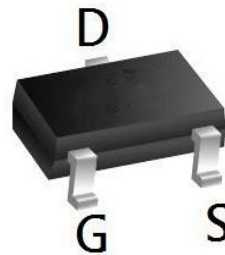


BVDSS	RDSON	ID
60V	1.7Ω	0.3A

Description

The XR3019 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications. The XR3019 meet the RoHS and Green Product requirement with full function reliability approved.

SOT-523 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _A =25°C	Continuous Drain Current	0.3	A
I _D @T _A =70°C	Continuous Drain Current	0.2	A
I _{DM}	Pulsed Drain Current ²	1	A
P _D @T _A =25°C	Total Power Dissipation ³	0.9	W
P _D @T _A =70°C	Total Power Dissipation ³	0.5	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 _{θJA}	Thermal Resistance Junction-Ambient ¹	---	125	°C/W
R _{θJA}	Thermal Resistance Junction-Ambient ¹ (t ≤ 10s)	---	---	°C/W

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =250uA	---	---	---	V/ °C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =0.3A, T _J =25°C	---	1.7	2.2	Ω
		V _{GS} =4.5V, I _D =0.2A, T _J =25°C	---	2.1	2.6	
		V _{GS} =2.5V, I _D =0.1A, T _J =125°C	---	---	---	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1	1.6	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	---	---	mV/ °C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =60V, V _{GS} =0V, T _J =125°C	---	---	50	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±10	uA
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =20A	---	---	---	S
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =0.3A	---	1.7	---	nC
Q _{gs}	Gate-Source Charge		---	0.3	---	
Q _{gd}	Gate-Drain Charge		---	0.6	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =10V, V _{GS} =10V, R _G =3Ω, I _D =0.2A	---	2	---	ns
T _r	Rise Time		---	15	---	
T _{d(off)}	Turn-Off Delay Time		---	7	---	
T _f	Fall Time		---	20	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	28	---	pF
C _{oss}	Output Capacitance		---	11	---	
C _{rss}	Reverse Transfer Capacitance		---	4	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	0.3	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =0.3A, T _J =25°C	---	---	1.2	V

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

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

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

4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Performance Characteristics

Figure 1: Output Characteristics

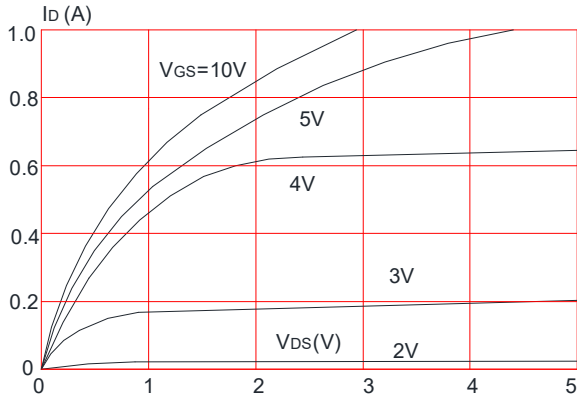


Figure 2: Typical Transfer Characteristics

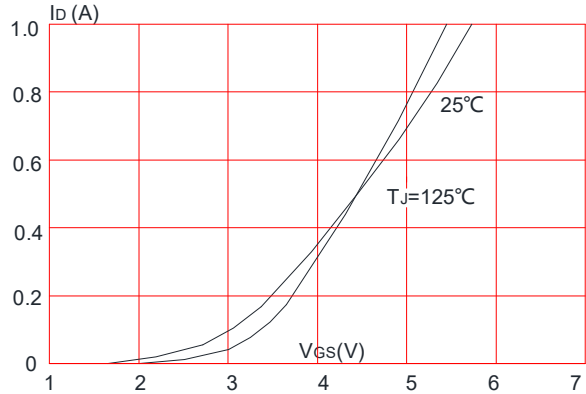


Figure 3: On-resistance vs. Drain Current

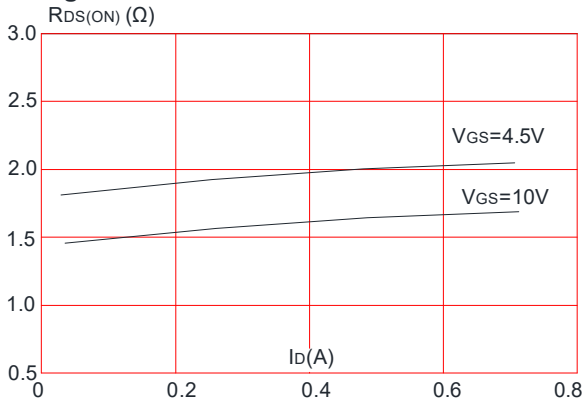


Figure 4: Body Diode Characteristics

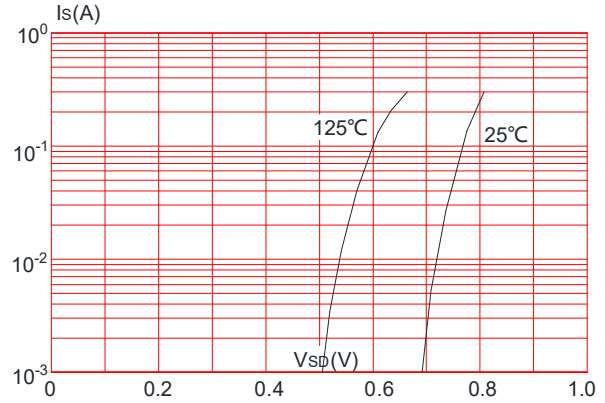


Figure 5: Gate Charge Characteristics

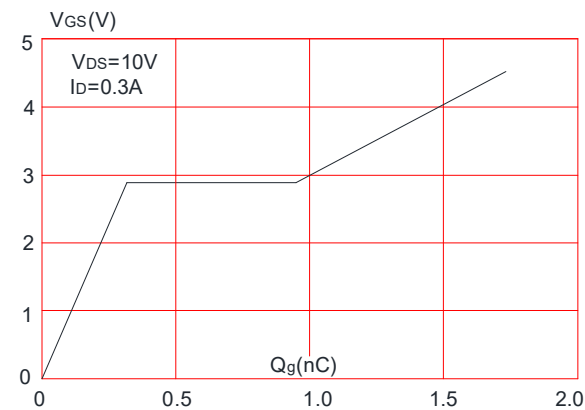


Figure 6: Capacitance Characteristics

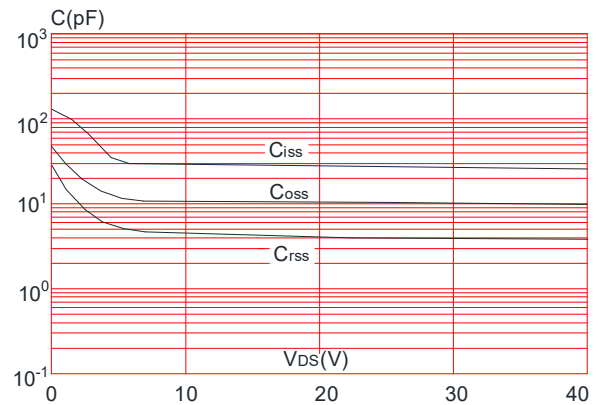


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

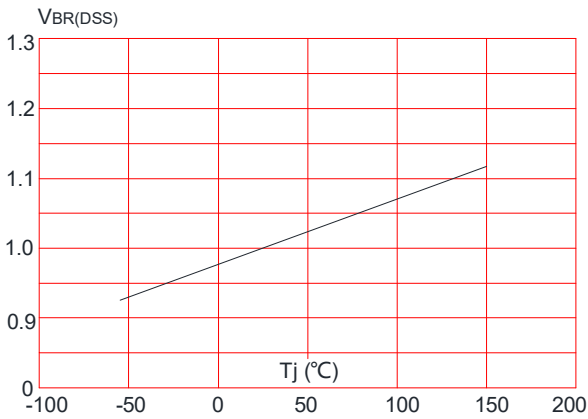


Figure 8: Normalized on Resistance vs. Junction Temperature

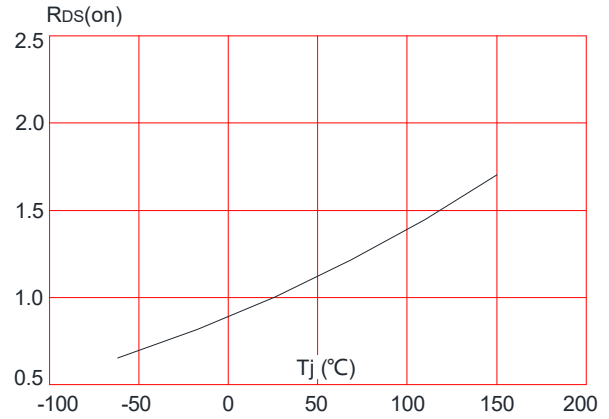


Figure 9: Maximum Safe Operating Area

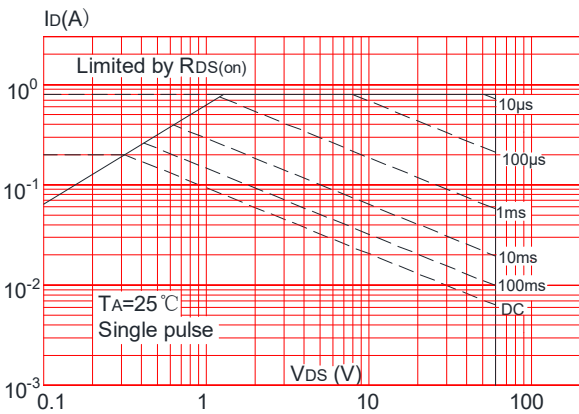


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

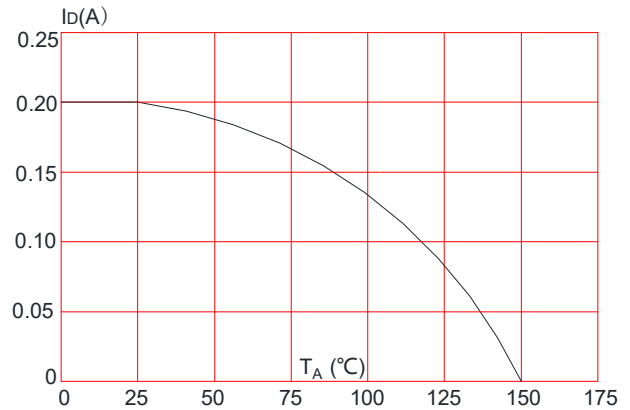
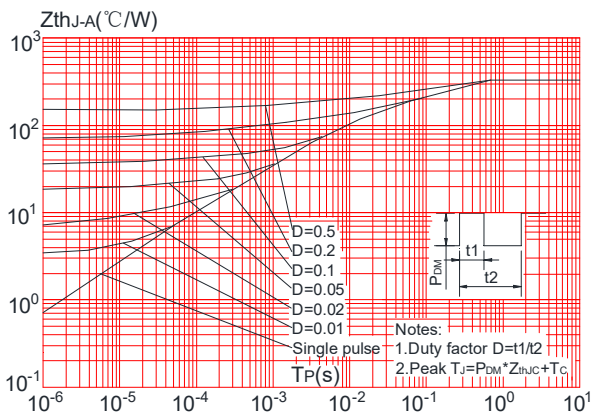
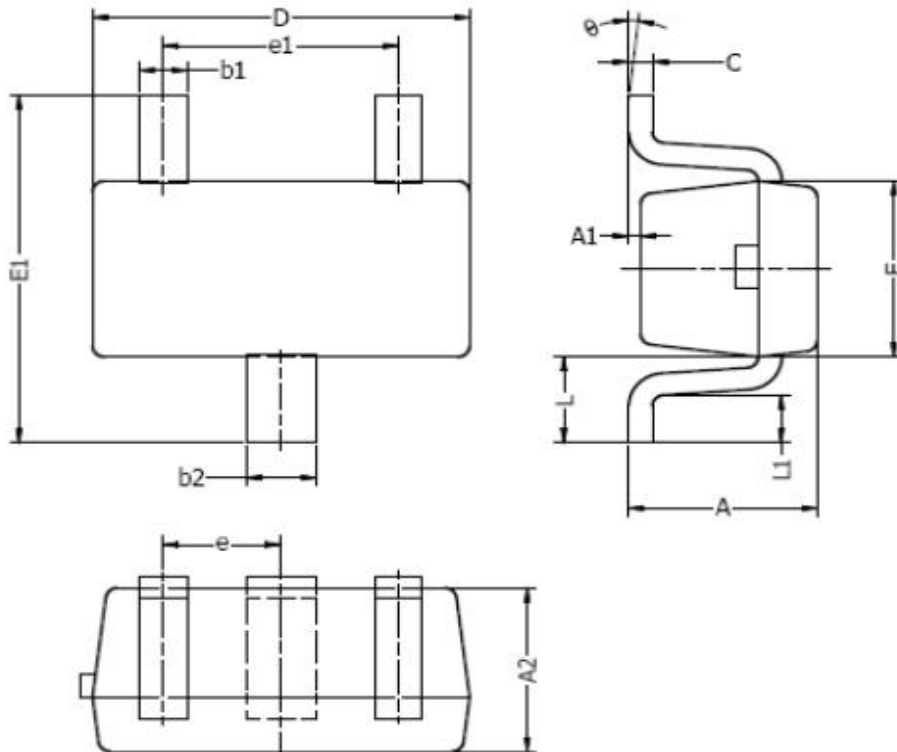


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Package Mechanical Data-SOT-523-3L



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
theta	0°	8°	0°	8°

NOTES:
 1. Above package outline conforms to JEITA EAJ ED-7500A SC-75A.
 2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.