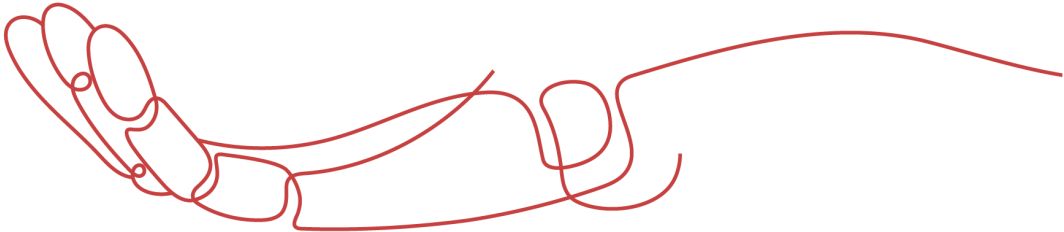




PRODUCT DATA SHEET



To learn more about JGSEMI, please visit our website at



Datasheet



Resources



Samples

Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

Product Summary

Features

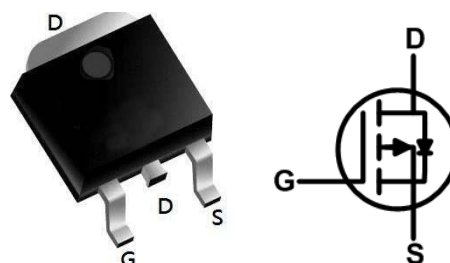
- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low RDS(ON)

BVDSS	RDS(ON)	ID
-60V	7.4mΩ	-80A

Applications

- Battery Switching Application
- Hard Switching and High frequency circuits
- Power management

TO252-3L



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	-80	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^{1,6}$	-50	A
I_{DM}	Pulsed Drain Current ²	-320	A
EAS	Single Pulse Avalanche Energy ³	450	mJ
I_{AS}	Avalanche Current	---	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ⁴	110	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	65	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	1.1	$^{\circ}C/W$

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 =-1mA	---	---	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-15A	---	7.4	9.3	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.6	-1.8	-2.3	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} =-60, V _{GS} =0V, T _J =100°C	---	---	-100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-20A	50	---	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	2	---	Ω
Q _g	Total Gate Charge	V _{DS} =-30, V _{GS} =-10V, I _D =-20A	---	56	---	nC
Q _{gs}	Gate-Source Charge		---	11	---	
Q _{gd}	Gate-Drain Charge		---	9	---	
T _{d(on)}	Turn-On Delay Time	V _{GS} =-10V, V _{DD} =-30V, R _G =3Ω, I _D =-15A	---	4.5	---	ns
T _r	Rise Time		---	2.5	---	
T _{d(off)}	Turn-Off Delay Time		---	14.5	---	
T _f	Fall Time		---	3.5	---	
C _{iss}	Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1MHz	---	3060	---	pF
C _{oss}	Output Capacitance		---	620	---	
C _{rss}	Reverse Transfer Capacitance		---	20	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	-80	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-15A, T _J =25°C	---	---	-1.2	V
t _{rr}	Reverse Recovery Time	I _F =-15A, di/dt=100A/μs	---	60	---	nS
Q _{rr}	Reverse Recovery Charge	μs, T _J =25°C	---	105	---	nC

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.

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

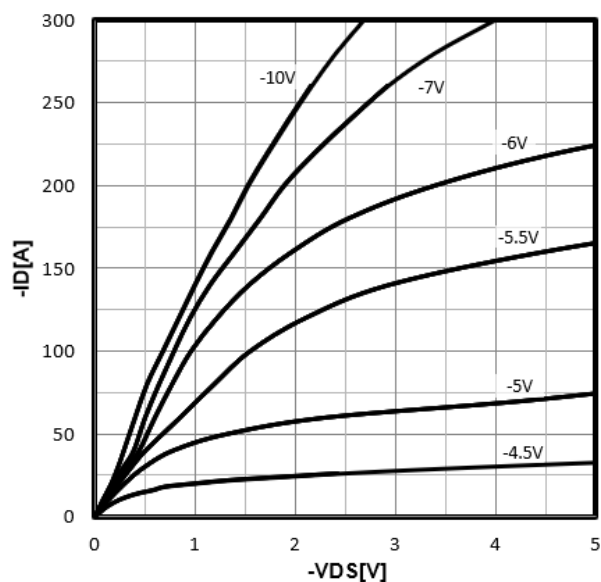
3.The EAS data shows Max. rating. The test condition is T_J = C, V_{DD}=-30V, V_{GS}=-10V, L=0.5mH

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

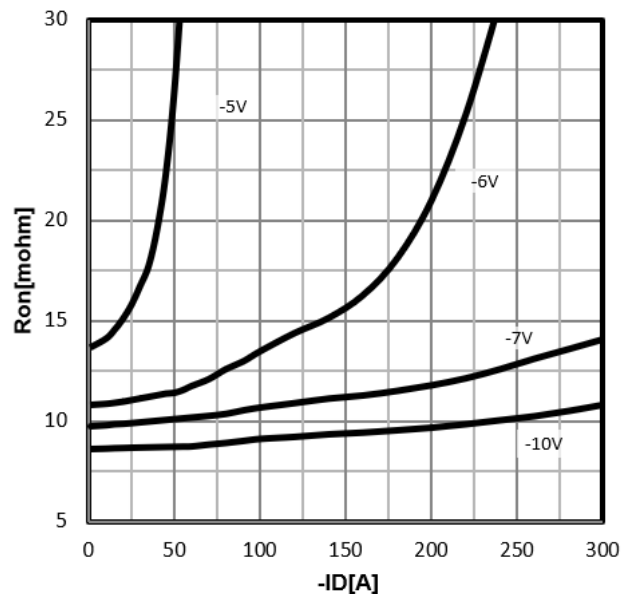
5.The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Characteristics Curve:
Typ. output characteristics

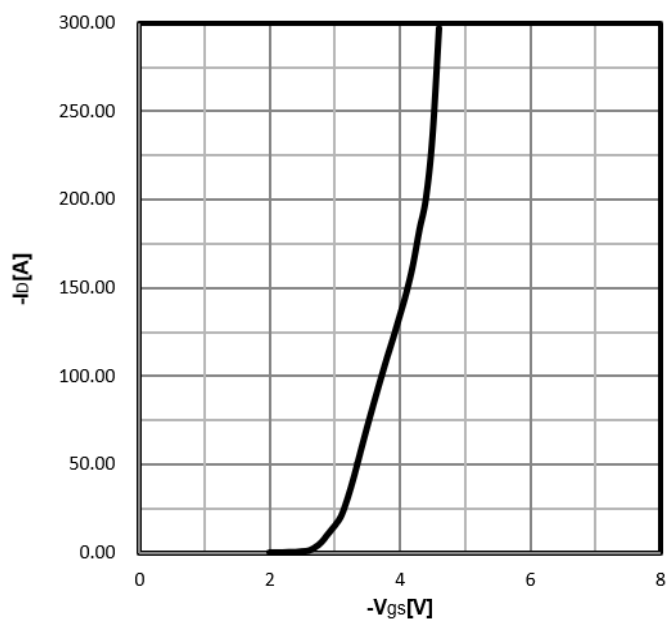
$$I_D = f(V_{DS})$$


Typ. drain-source on resistance

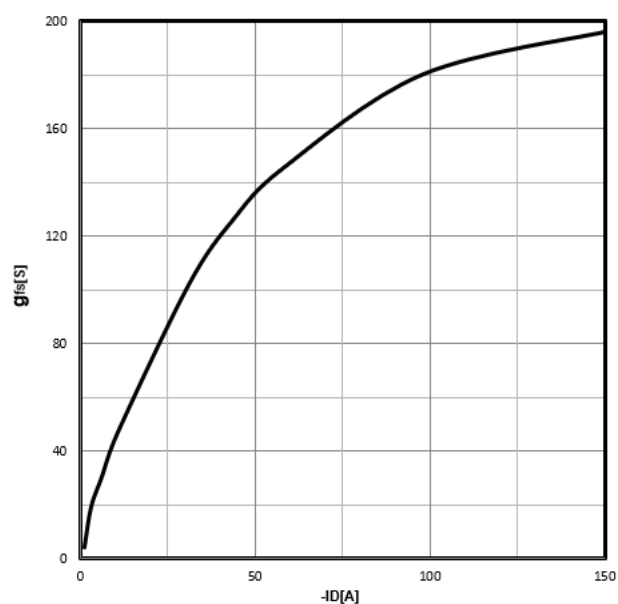
$$R_{DS(on)} = f(I_D)$$


Typ. transfer characteristics

$$I_D = f(V_{GS})$$

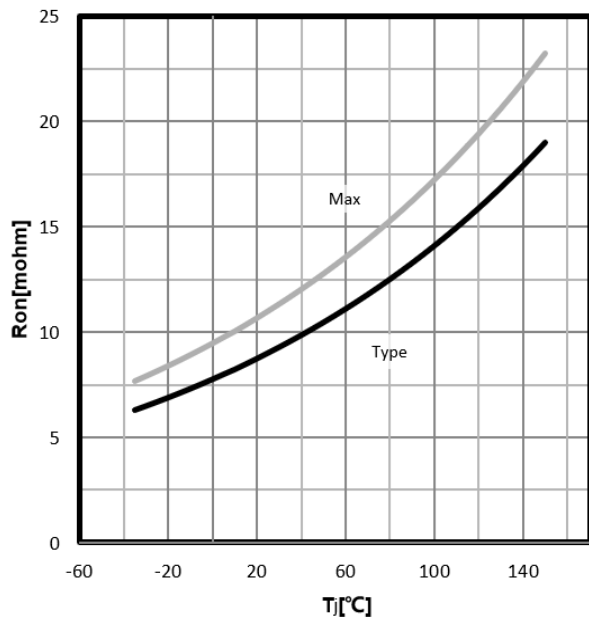

Typ. forward transconductance

$$g_{fs} = f(I_D)$$

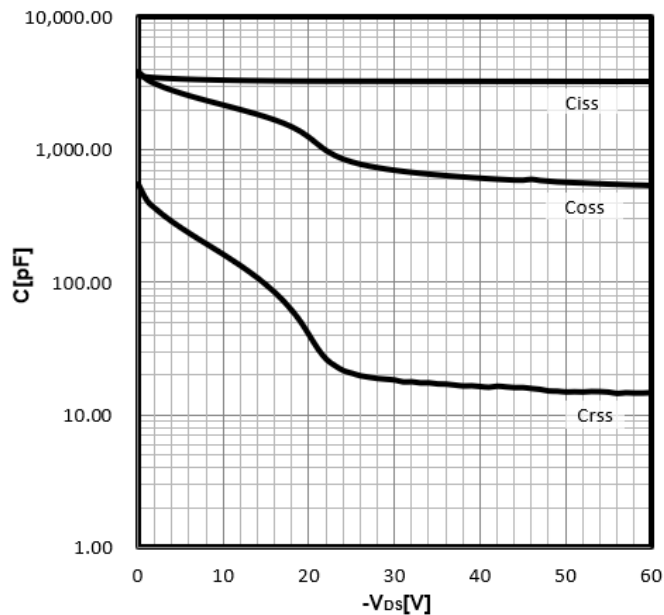


Drain-source on-state resistance

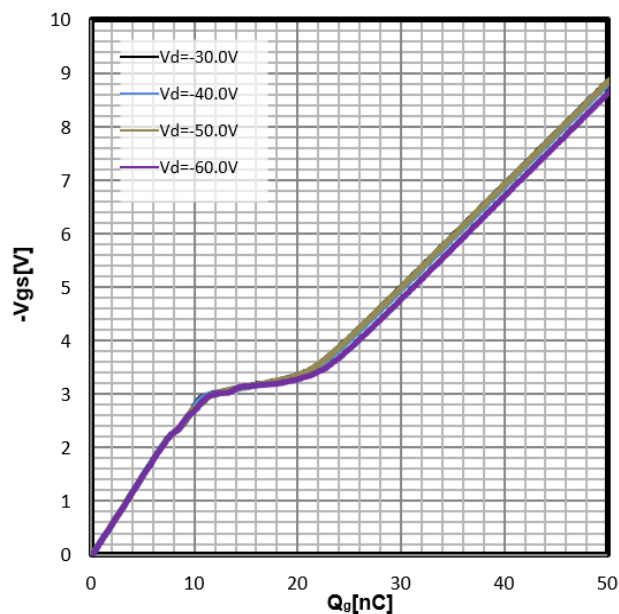
$$R_{DS(on)} = f(T_j); I_D = -20A; V_{GS} = -10V$$


Typ. capacitances

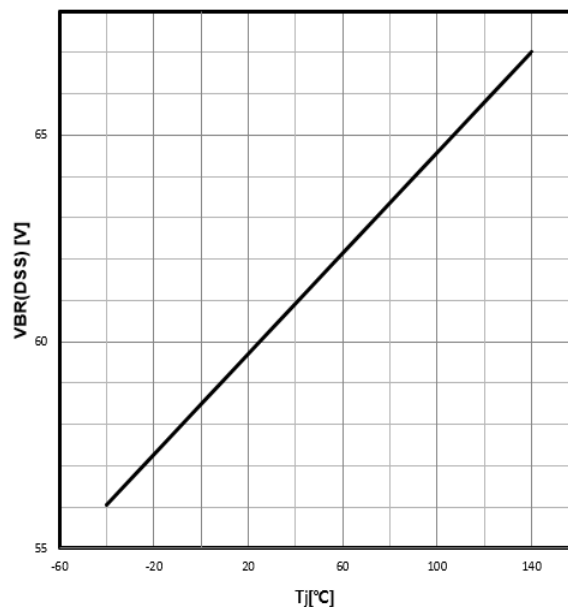
$$C = f(V_{DS}); V_{GS} = 0V; f = 1MHz$$


Typ. gate charge

$$V_{GS} = f(Q_{gate}); I_D = -20A$$

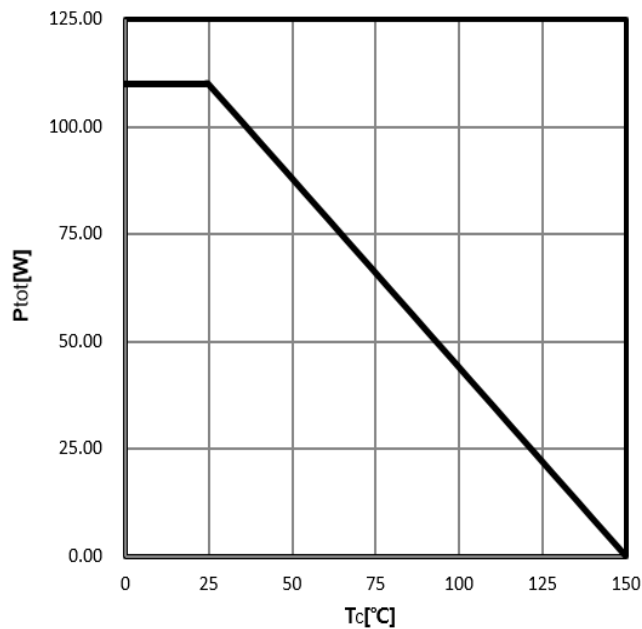

Drain-source breakdown voltage

$$V_{BR(DSS)} = f(T_j); I_D = -250\mu A$$

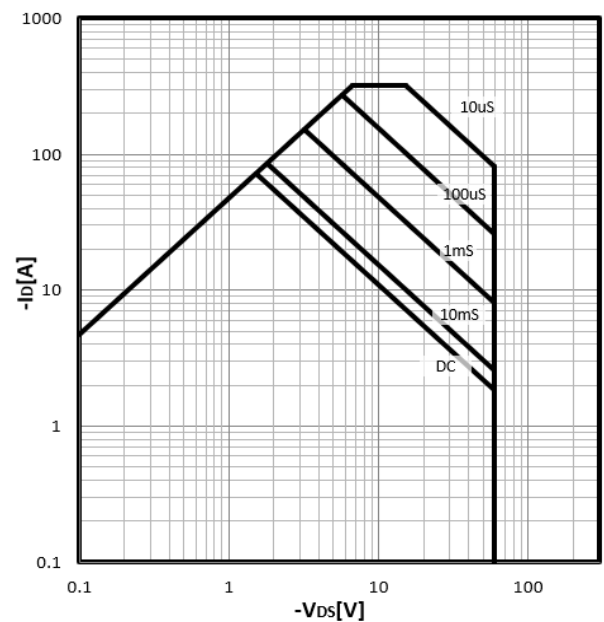


Power Dissipation

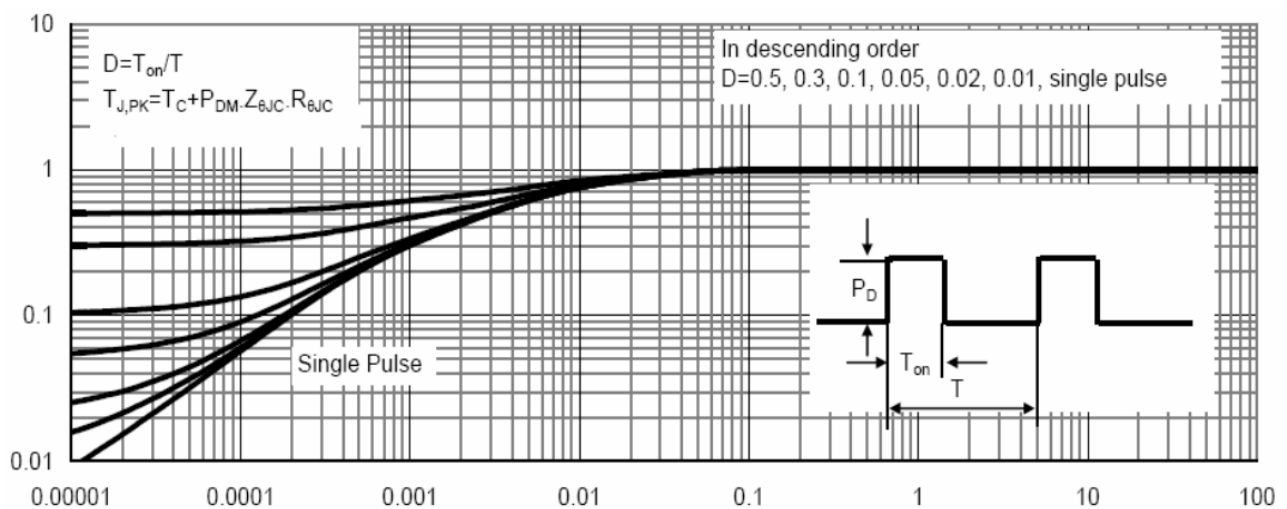
$$P_{tot}=f(T_c)$$



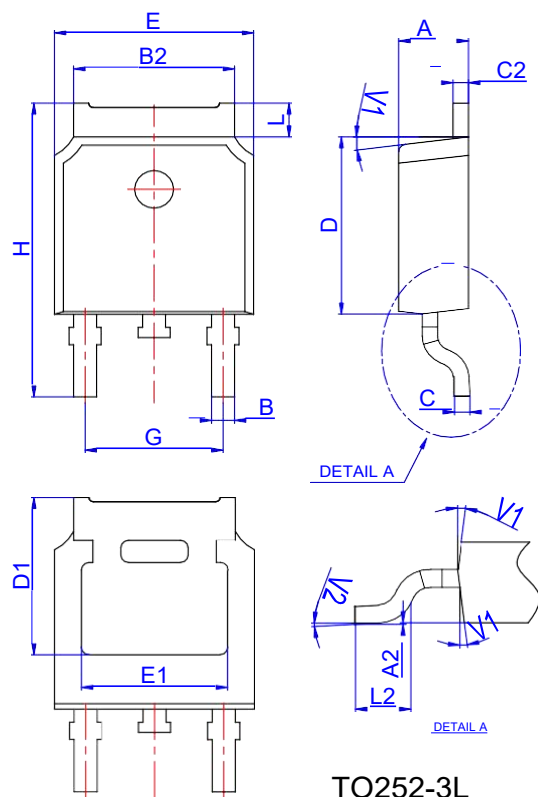
$$I_D=f(V_{DS})$$


Max. transient thermal impedance

$$Z_{thJC}=f(t_p)$$



Package Mechanical Data-TO252-3L



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°

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