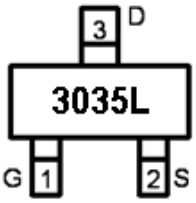
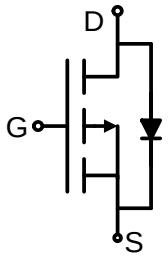
Main Product Characteristics:

V_{DSS}	-30V
R_{DS}(on)	22mΩ (typ.)
I_D	-6A ①

SOT23-3



Marking and pin Assignment



Schematic diagram

Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute max Rating: @T_A=25℃ unless otherwise specified

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	-6	A
I_D @ TC = 70°C	Continuous Drain Current, V_{GS} @ 10V ①	-5	
I_{DM}	Pulsed Drain Current ②	-30	
P_D @TC = 25°C	Power Dissipation ③	2	W
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-to-Source Voltage	±20	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

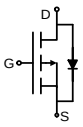
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	62.5	°C /W

Electrical Characterizes @T_A=25℃ unless otherwise specified

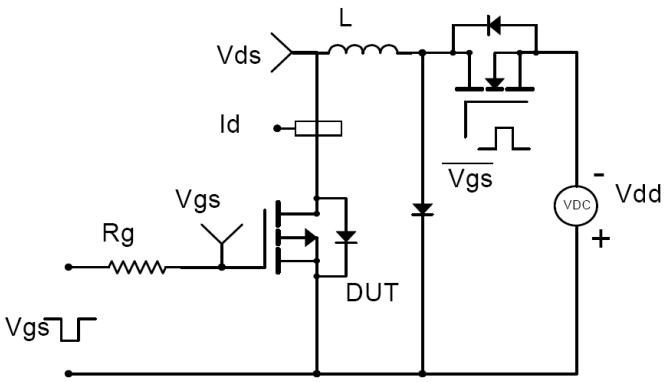
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-30	—	—	V	V_{GS} = 0V, I_D = -250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	22	30	mΩ	V_{GS}=-10V,I_D = -5.4A
		—	33	40		V_{GS}=-4.5V,I_D = -4.6A
$V_{GS(th)}$	Gate threshold voltage	-1.2	—	-2.5	V	V_{DS} = V_{GS}, I_D = -250μA
		—	-1.45	—		T_J = 125°C
I_{DSS}	Drain-to-Source leakage current	—	—	-1	μA	V_{DS} = -30V,V_{GS} = 0V
		—	—	-50		T_J = 125°C
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	10	—	nC	I_D = -6A,
Q_{gs}	Gate-to-Source charge	—	3	—		V_{DS}=-15V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	4	—		V_{GS} = -4.5V
$t_{d(on)}$	Turn-on delay time	—	10.5	—	ns	V_{GS}=-10V, V_{DS} =-15V, R_{GEN}=3Ω,R_L=2.7Ω
t_r	Rise time	—	5.4	—		
$t_{d(off)}$	Turn-Off delay time	—	25	—		
t_f	Fall time	—	8.5	—		
C_{iss}	Input capacitance	—	1300	—	pF	V_{GS} = 0V,
C_{oss}	Output capacitance	—	150	—		V_{DS} =-25V,
C_{rss}	Reverse transfer capacitance	—	132	—		f = 1MHz

Source-Drain Ratings and Characteristics

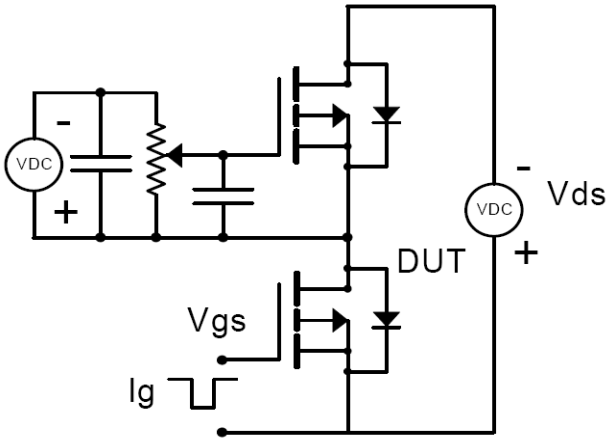
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	-6	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-30	A	
V_{SD}	Diode Forward Voltage	—	-0.82	-1.2	V	I_S=-4.3A, V_{GS}=0V

Test circuits and Waveforms

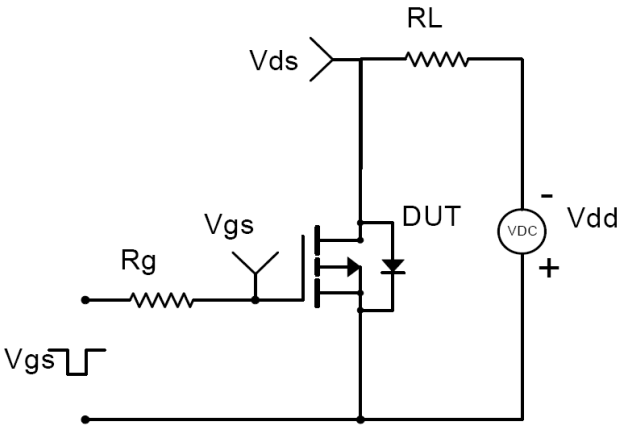
EAS test circuit:



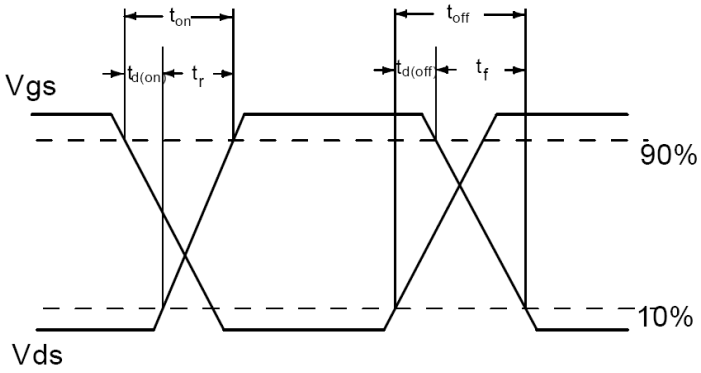
Gate charge test circuit:



Switching time test circuit:



Switch Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

④The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C

Typical electrical and thermal characteristics

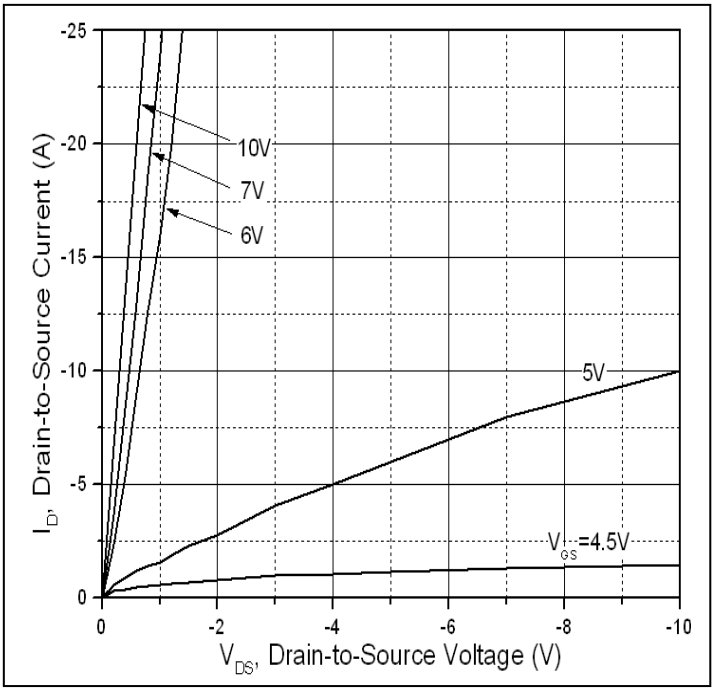


Figure 1: Typical Output Characteristics

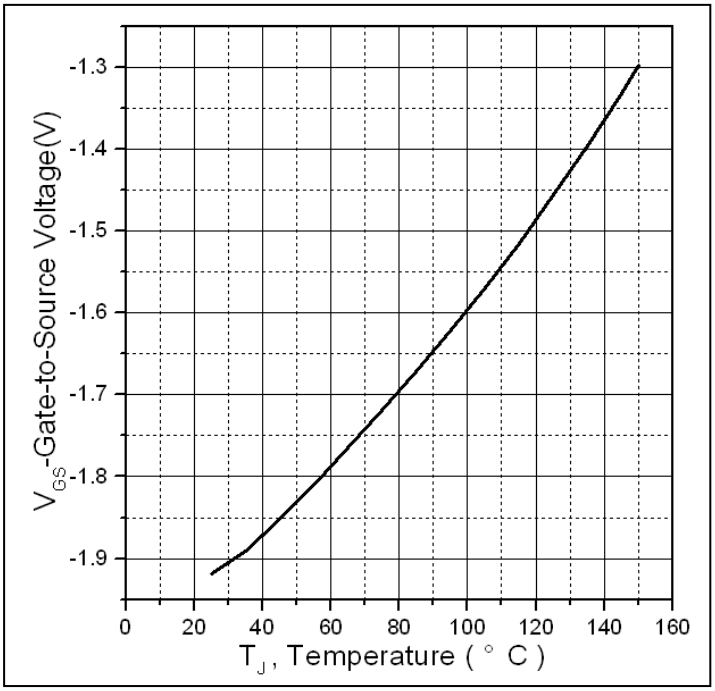


Figure 2. Gate to source cut-off voltage

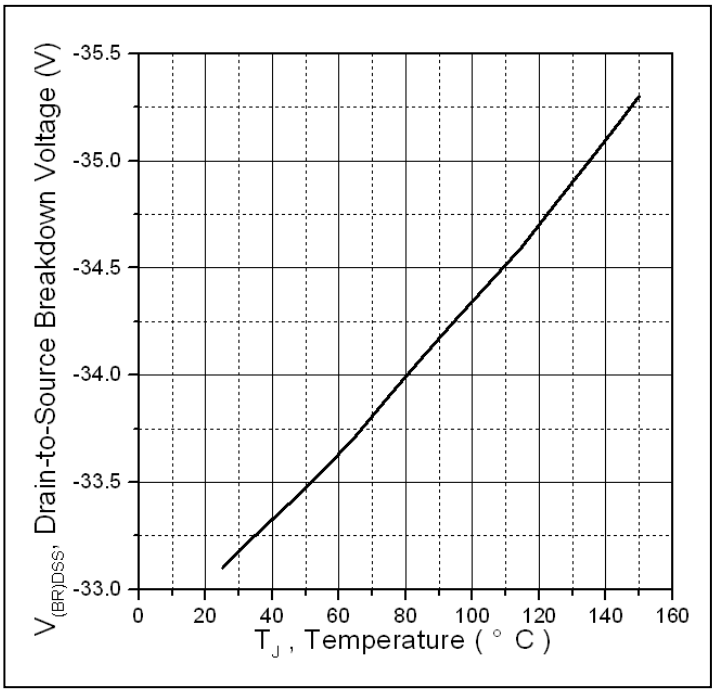


Figure 3. Drain-to-Source Breakdown Voltage Vs. Case Temperature

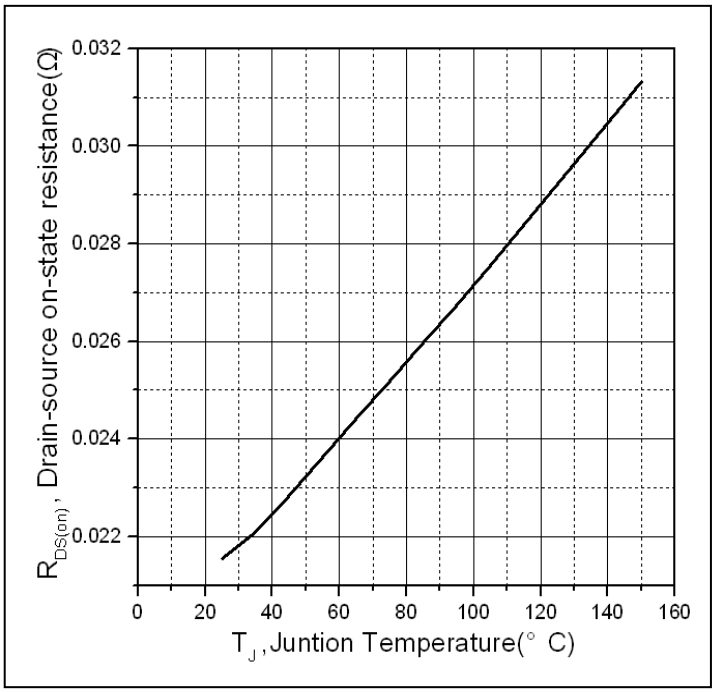


Figure 4: Normalized On-Resistance Vs. Case Temperature

Typical electrical and thermal characteristics

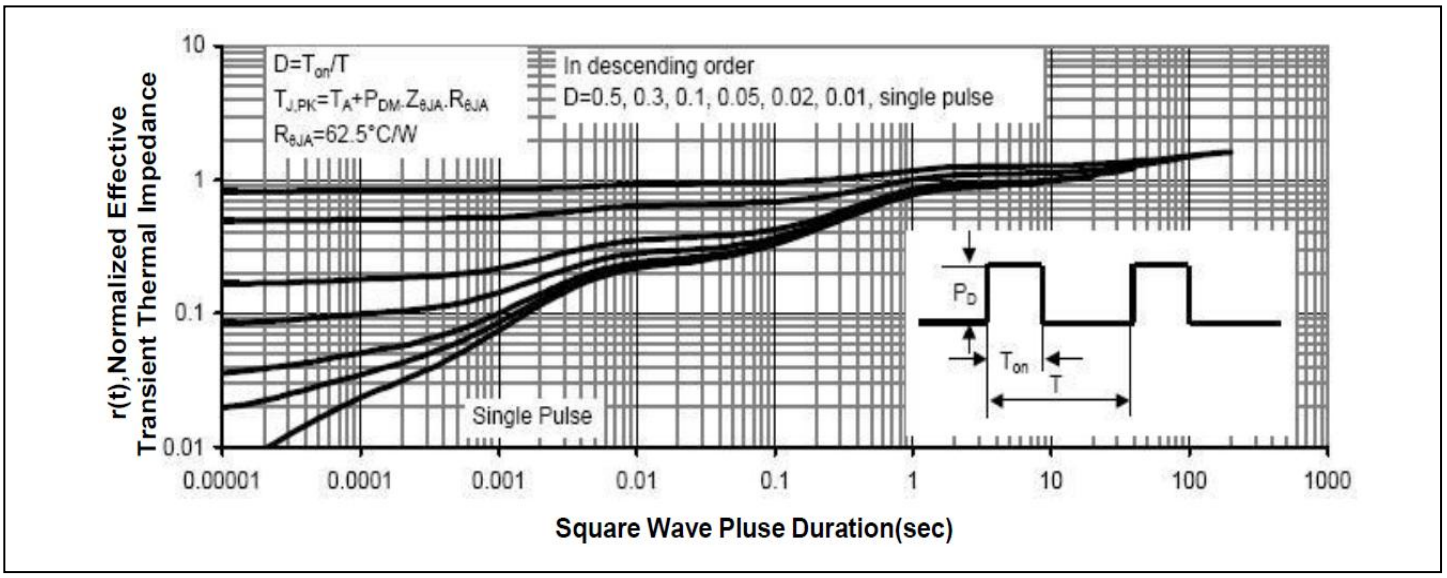


Figure5. Maximum Effective Transient Thermal Impedance

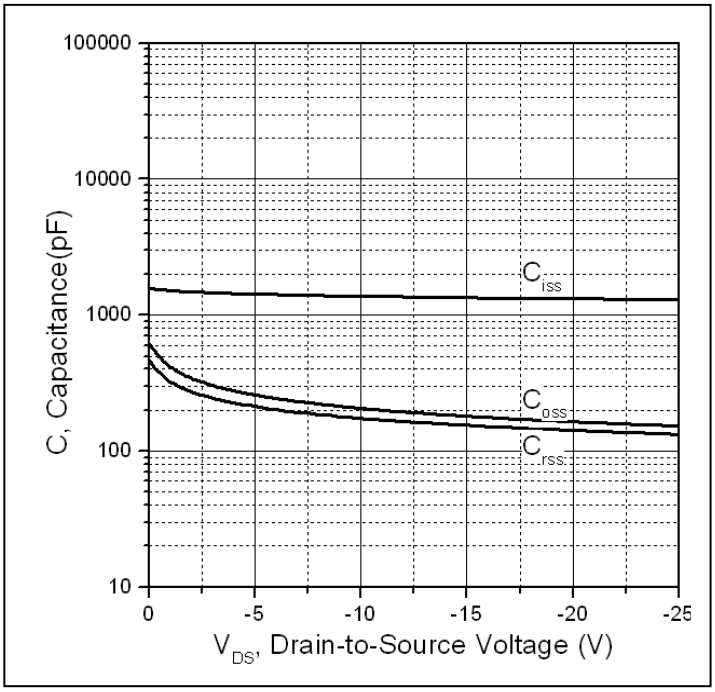
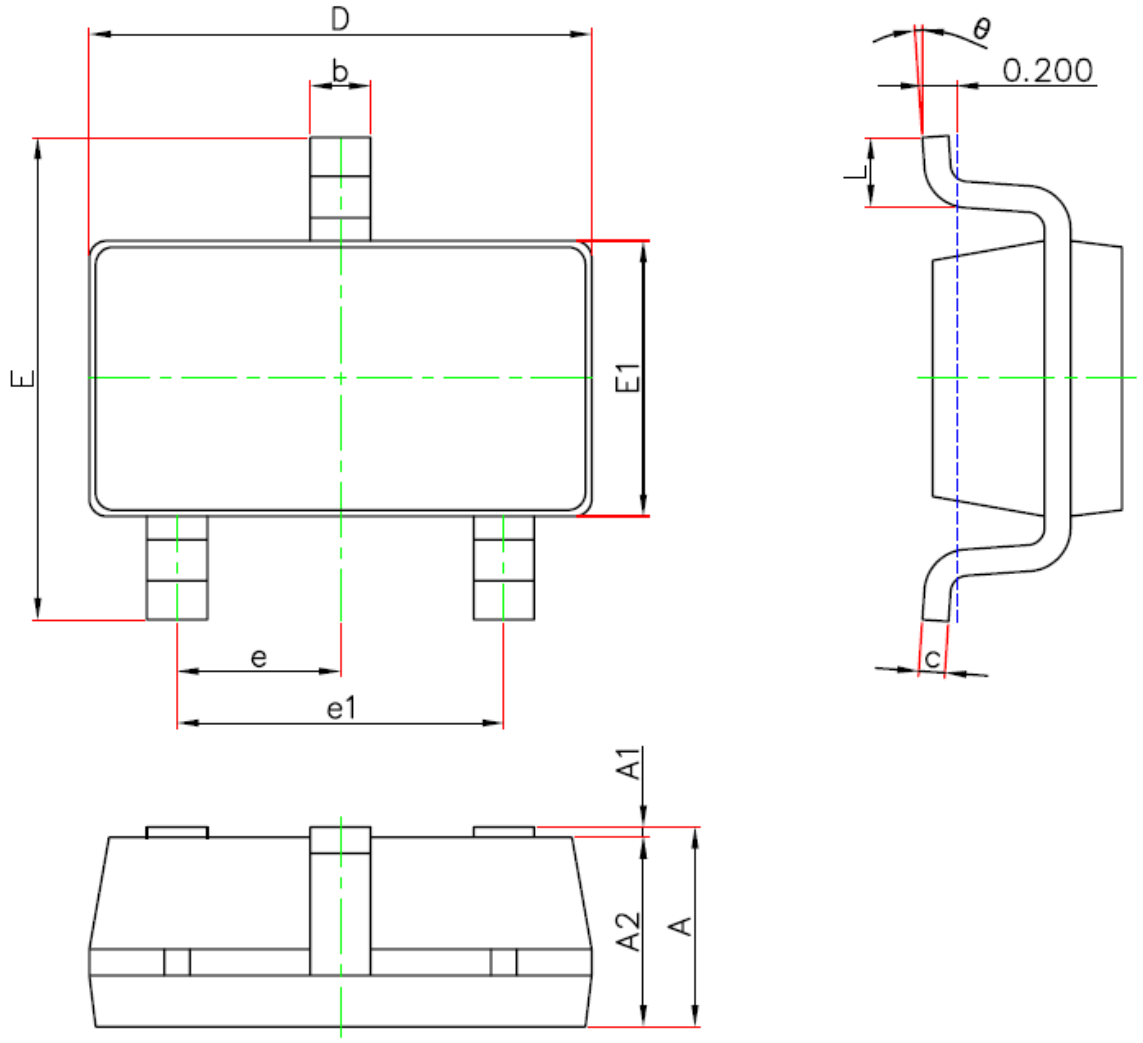


Figure 6. Typical Capacitance Vs. Drain-to-Source Voltage

Mechanical Data:



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Ordering and Marking Information

Device Marking: 3035L

Package (Available)

SOT23-3

Operating Temperature Range

C : -55 to 150 ºC

Devices per Unit

Package Type	Units/ Tape	Tapes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
SOT23-3	3000	10	30000	4	120000

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	Tj=125℃ to 150℃ @ 80% of Max $V_{DSS}/V_{CES}/V_R$	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	Tj=150℃@ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices

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