

N-Ch 60V Fast Switching MOSFETs

Features

- Low $R_{DS(on)}$ @ $V_{GS}=10V$
- 5V Logic Level Control
- N Channel SOT523 Package
- HMB ESD Protection 1KV
- Pb-Free, RoHS Compliant

Applications

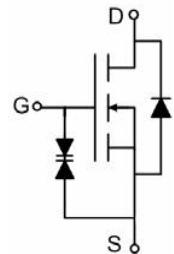
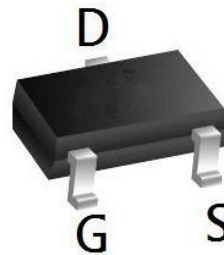
- LED Lighting Application,
- ON/OFF switch
- Networking

Product Summary



BVDSS	RDSON	ID
60V	1.5Ω	0.5A

SOT-523 Pin Configuration

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

Symbol	Parameter	Rating	Unit	
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage	±20	V	
V _{(BR)DSS}	Drain-Source Breakdown Voltage	60	V	
T _J	Maximum Junction Temperature	150	°C	
T _{STG}	Storage Temperature Range	-50 to 150	°C	
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested①	T _A =25°C	0.8	A
I _D	Continuous Drain Current(V _{GS} =4.5V)	T _A =25°C	0.3	A
		T _A =70°C	0.24	
P _D	Maximum Power Dissipation	T _A =25°C	0.9	W
		T _A =70°C	0.6	
R _{θJA}	Thermal Resistance Junction-Ambient	125	°C/W	

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Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parame	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	60	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(T _A =25°C)	V _{DS} =60V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T _A =125°C)	V _{DS} =60V, V _{GS} =0V	--	--	100	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =10V, I _D =0.3A	--	1.5	3	Ω
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =4.5V, I _D =0.2A	--	2.6	6	Ω
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	--	1		pF
C _{oss}	Output Capacitance		--	3	--	pF
C _{rss}	Reverse Transfer Capacitance		--	0	--	pF
Q _g	Total Gate Charge	V _{DS} =30V I _D =0.3A, V _{GS} =4.5V	--	0.5	--	nC
Q _{gs}	Gate Source Charge		--	0.12	--	nC
Q _{gd}	Gate Drain Charge		--	0.21	--	nC
Switching Characteristics						
t _{d(on)}	Turn on Delay Time	V _{DD} =30V, I _D =0.3A, R _G =3.3Ω, V _{GS} =10V	--	4.5	--	n
t _r	Turn on Rise Time		--	3.1	--	n
t _{d(off)}	Turn Off Delay Time		-	15	--	n
t _f	Turn Off Fall Time		--	3.3	--	n
Source Drain Diode Characteristics						
I _{SD}	Source drain current(Body Diode)	T _A =25°C	--	-	0.2	A
V _{SD}	Forward on voltage②	T _J =25°C, I _{SD} =0.2A, V _{GS} =0V	--	0	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

② Pulse test ; Pulse width≤300μs, duty cycle≤2%.

Typical Characteristics

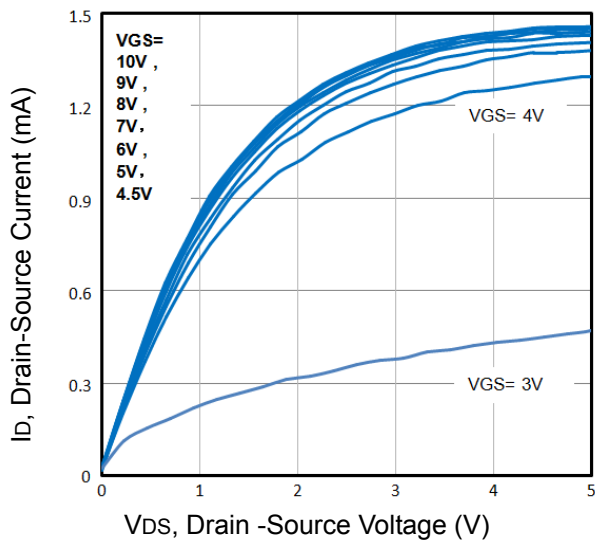


Fig1. Typical Output Characteristics

N-Ch 60V Fast Switching MOSFETs

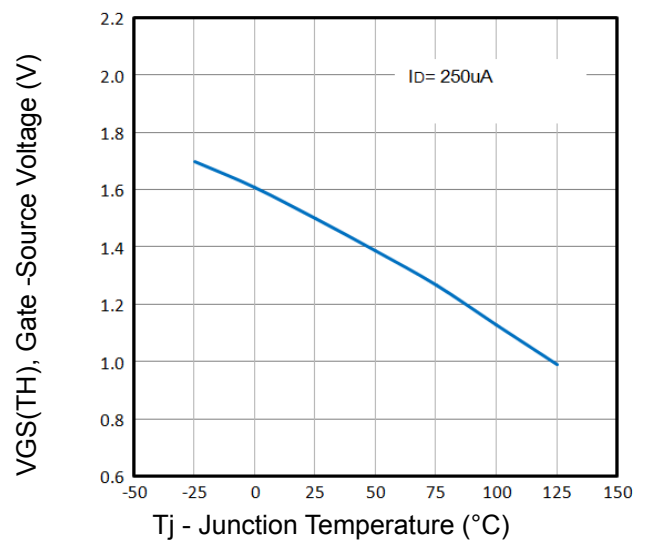


Fig2. Normalized Threshold Voltage Vs. Temperature

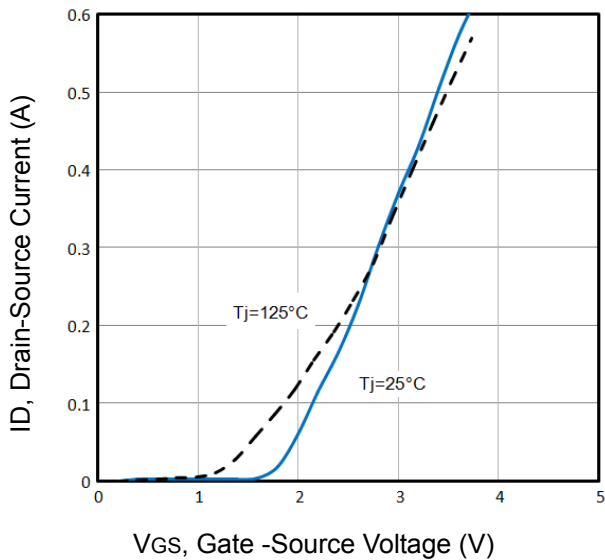


Fig3. Typical Transfer Characteristics

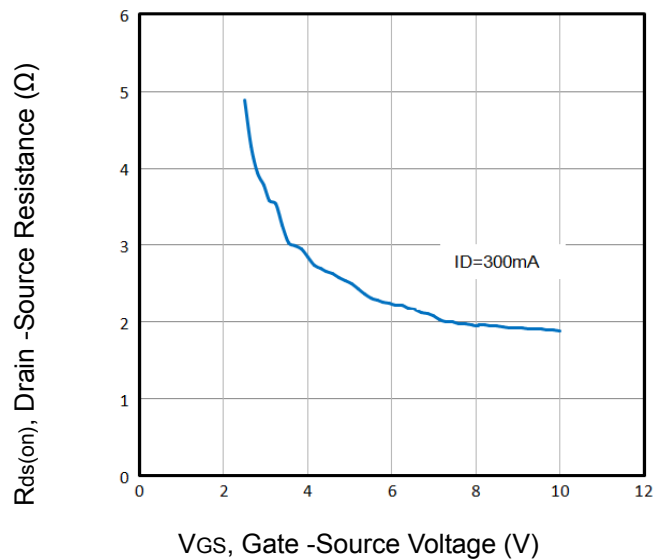


Fig4. $R_{ds(on)}$ vs Gate-Source Voltage

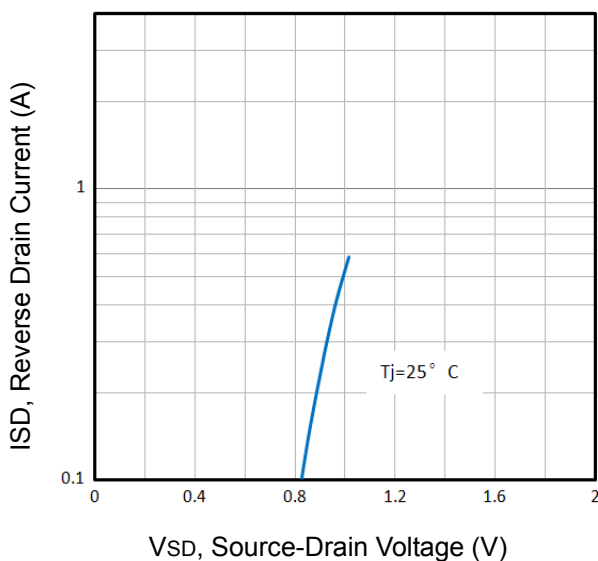


Fig5. Typical Source-Drain Diode Forward Voltage

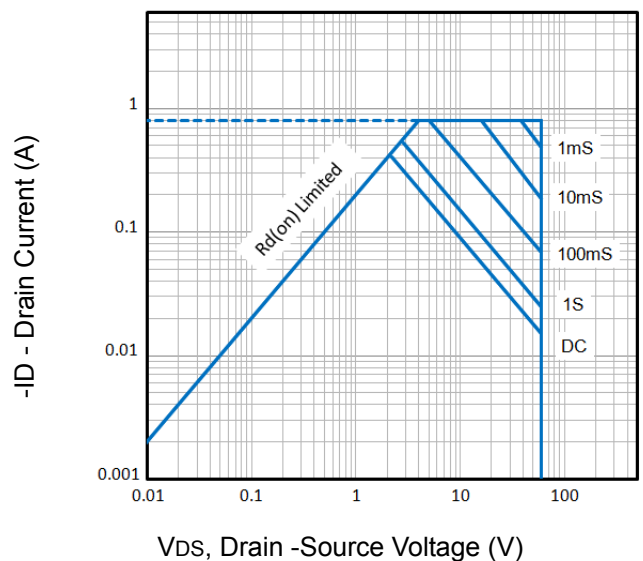


Fig6. Maximum Safe Operating Area

N-Ch 60V Fast Switching MOSFETs

Typical Characteristics

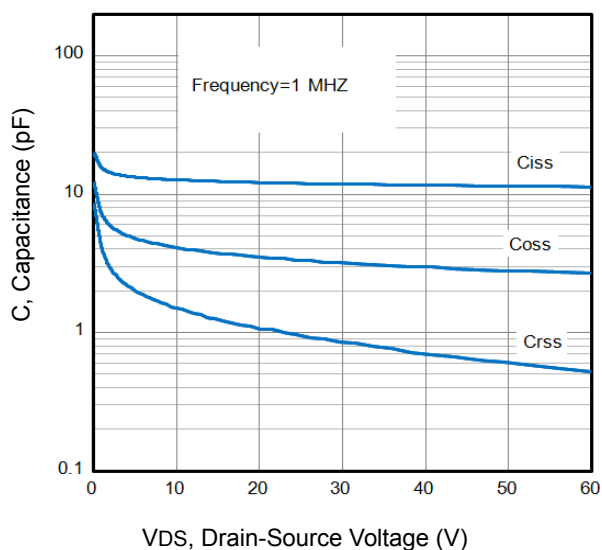


Fig7. Typical Capacitance Vs. Drain-Source Voltage

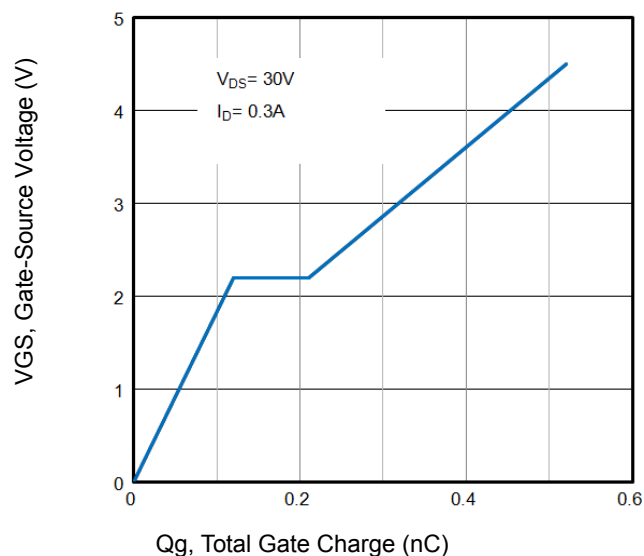


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

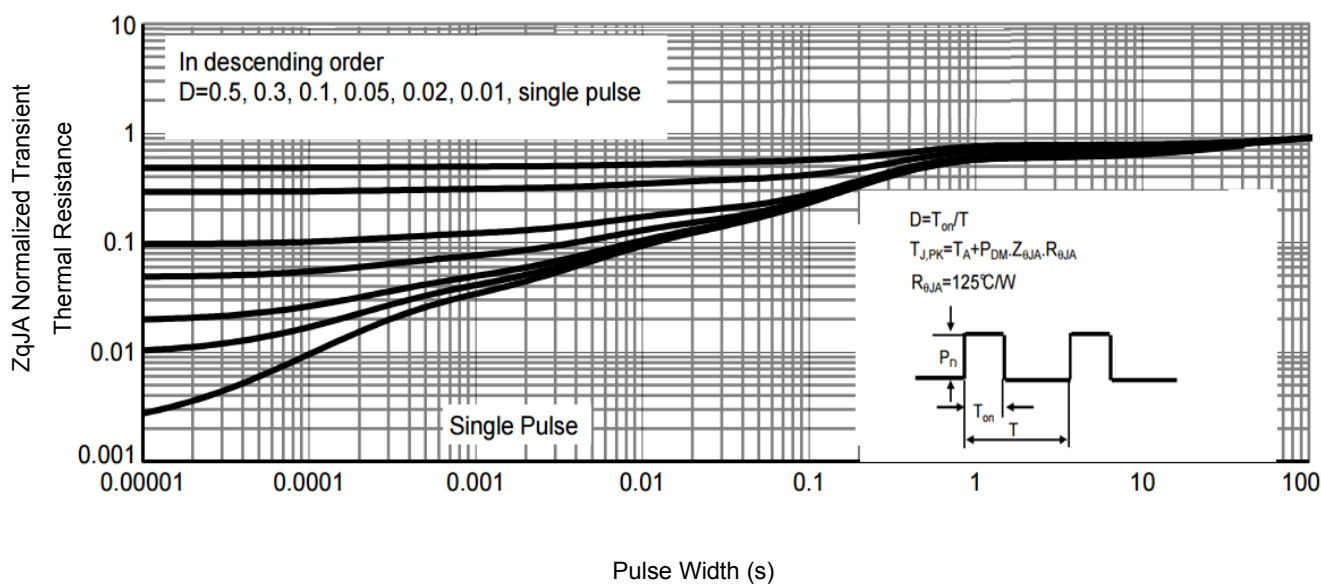


Fig9. Normalized Maximum Transient Thermal Impedance

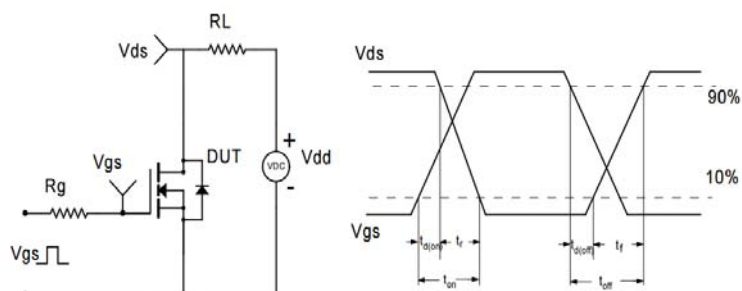
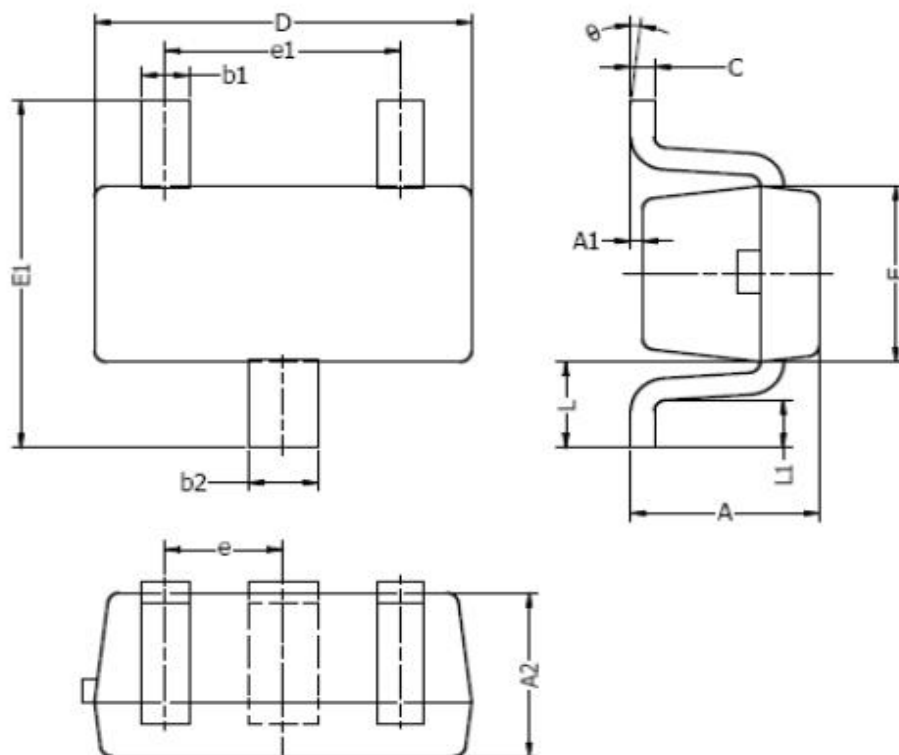


Fig10. Switching Time Test Circuit and waveforms

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
θ	0°	8°	0°	8°

NOTES:

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