

• Product Summary

Part #	V _{DS}	R _{DS(on)} .typ (@V _{GS} =4.5V)	R _{DS(on)} .typ (@V _{GS} =2.5V)	I _D
EFM3493A	-20V	56mΩ	70mΩ	-3A

• Features

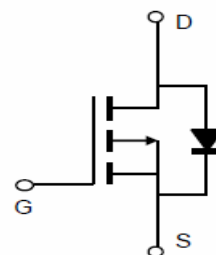
- Low R_{DS(on)} @V_{GS}=-4.5V
- -2.5V Logic Level Control
- P Channel SOT23-3L Package
- Pb-Free, RoHS Compliant

• Application

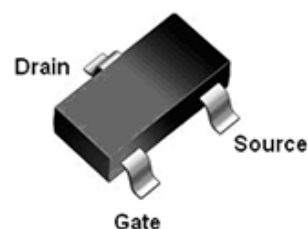
- High-side Load Switch
- Switching Circuits
- High Speed line Driver

• Ordering Information:

Part NO.	EFM3493A
Marking	L3****
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000



P-Channel MOSFET



SOT23-3L



• Absolute Maximum Ratings (T_C=25°C)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-20	V
Gate-Source Voltage	V _{GS}	±12	V
Drain Current-Continuous	I _D	-3	A
Drain Current-Pulsed ^(Note 1)	I _{DM}	-15	A
Maximum Power Dissipation	P _D	1.4	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 To 150	°C

• Thermal Characteristic

Thermal Resistance, Junction-to-Ambient ^(Note 2)	R _{θJA}	100	°C/W
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• Static Electrical Characteristics @ $T_J = 25^{\circ}\text{C}$ (unless otherwise stated)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	-20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V$ $V_{GS}=0V$	--	--	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V$ $V_{DS}=0V$	--	--	± 100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	-0.4	-0.6	-1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V$ $I_D=-3A$	--	56	66	m Ω
		$V_{GS}=2.5V$ $I_D=-2.6A$	--	70	80	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V$ $I_D=-3A$	--	12	--	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C_{Iss}	$V_{DS}=-10V$ $V_{GS}=0V$ F=1.0MHz	--	500	--	PF
Output Capacitance	C_{Oss}		--	70	--	PF
Reverse Transfer Capacitance	C_{rss}		--	50	--	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-10V$ $I_D=-3A$ $V_{GS}=-4.5V$ $R_G=3.3\Omega$,	--	7.2	--	nS
Turn-on Rise Time	t_r		--	36	--	nS
Turn-Off Delay Time	$t_{d(off)}$		--	53	--	nS
Turn-Off Fall Time	t_f		--	56	--	nS
Total Gate Charge	Q_g	$V_{DS}=-10V$ $I_D=-3A$ $V_{GS}=-4.5V$	--	8.5	--	nC
Gate-Source Charge	Q_{gs}		--	1.2	--	nC
Gate-Drain Charge	Q_{gd}		--	2.1	--	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V_{SD}	$V_{GS}=0V$ $I_S=-3A$	--	-0.85	-1.2	V
Diode Forward Current ^(Note 2)	I_S		--	--	-3	A

Notes:

- ① Pulse width limited by maximum allowable junction temperature
 ② Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

• Typical Characteristics

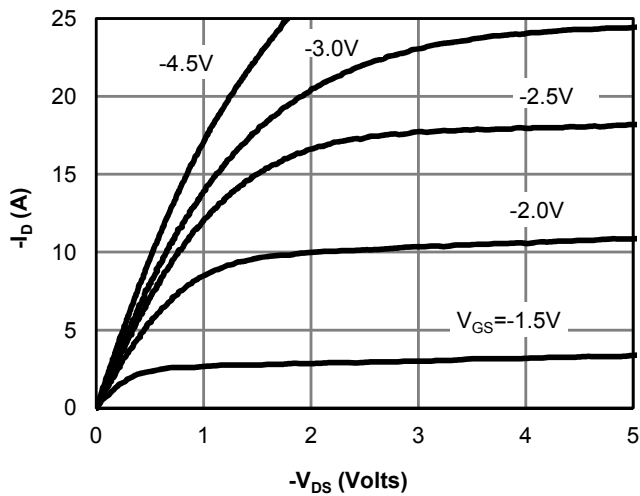


Figure 1: On-Region Characteristics

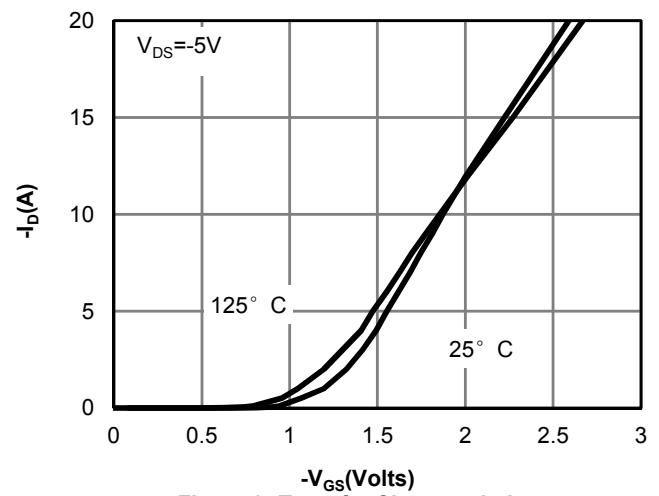


Figure 2: Transfer Characteristics

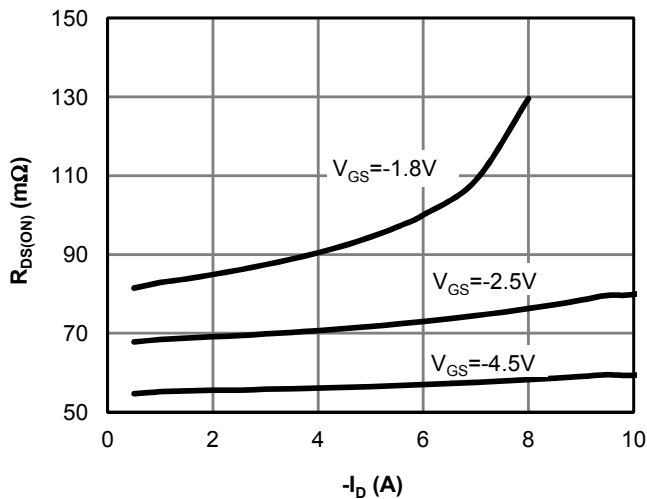


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

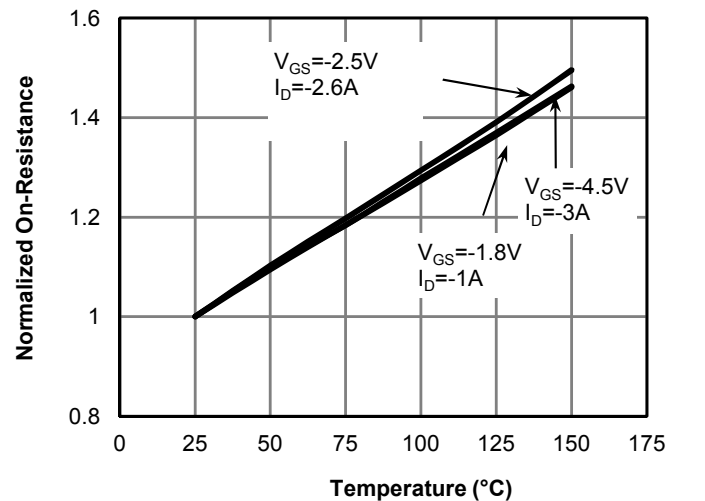


Figure 4: On-Resistance vs. Junction Temperature

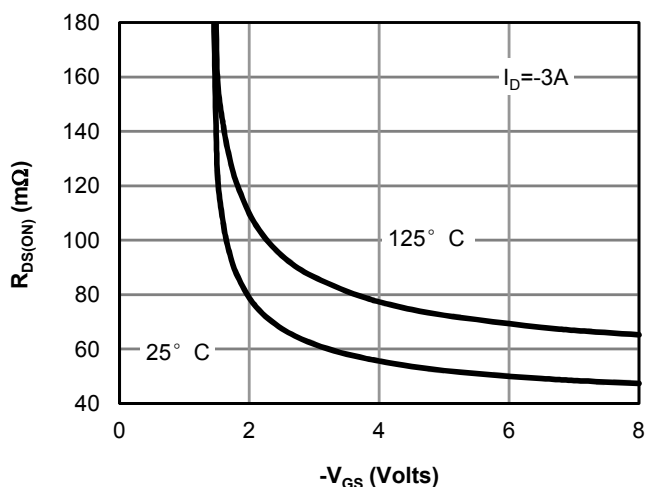


Figure 5: On-Resistance vs. Gate-Source Voltage

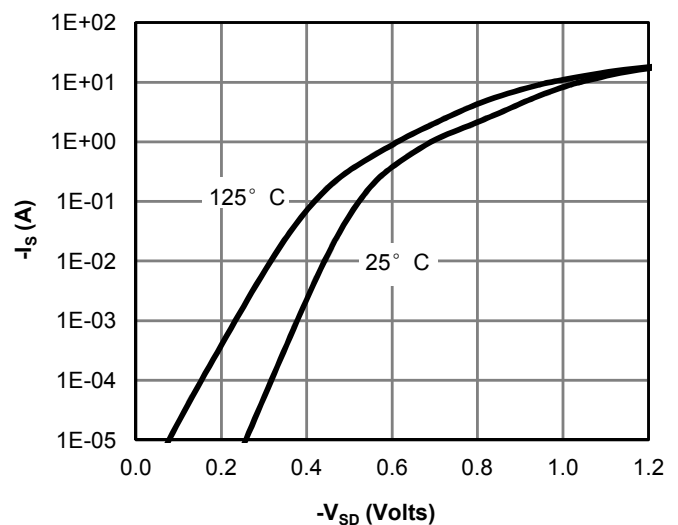
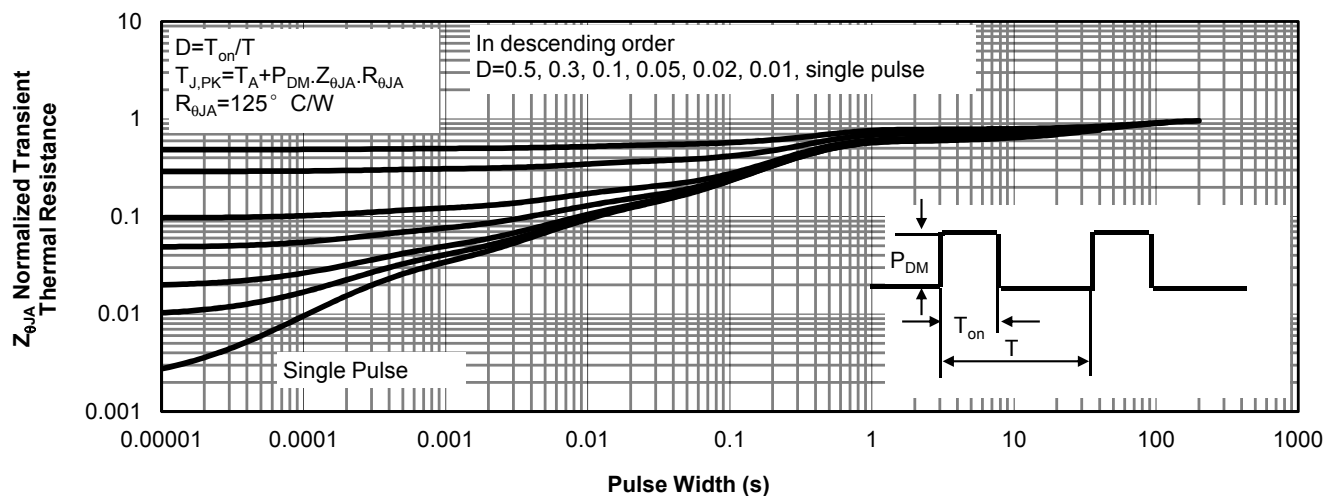
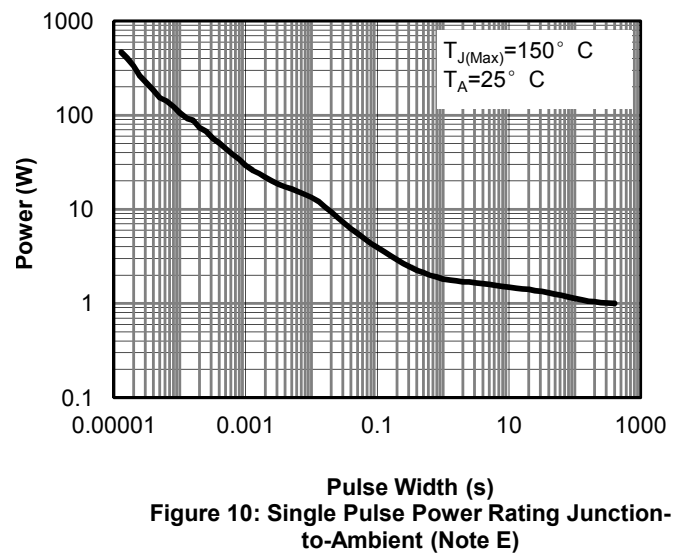
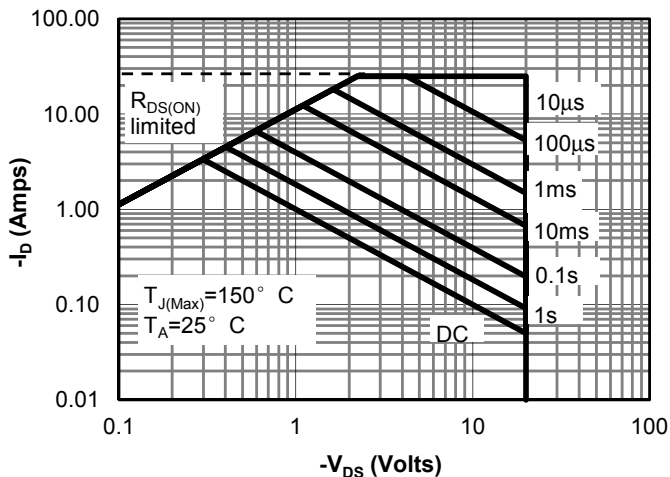
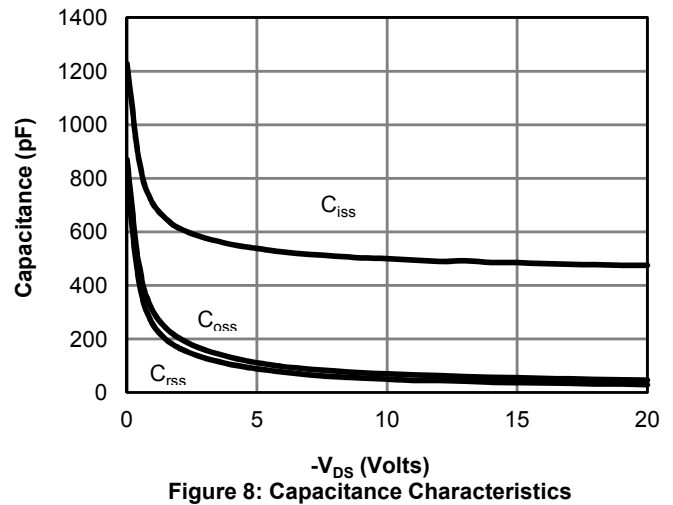
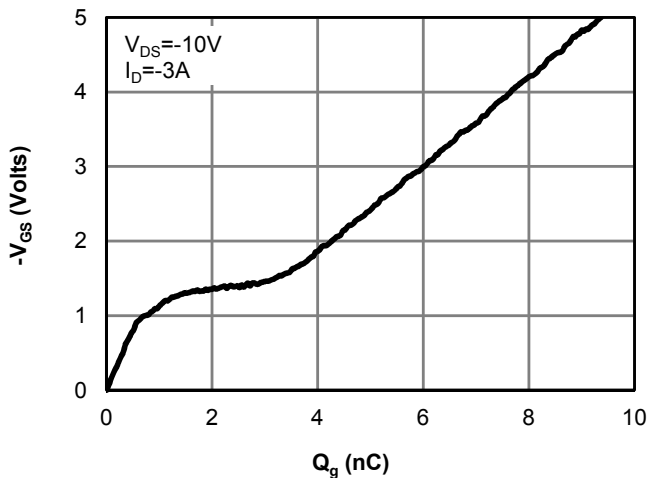
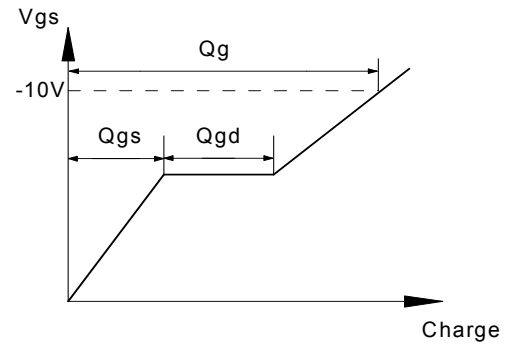
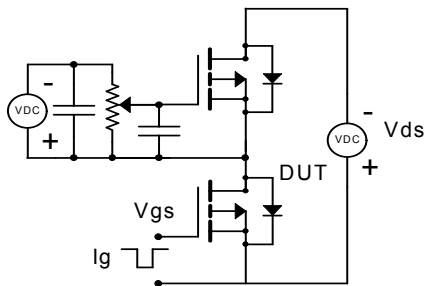


Figure 6: Body-Diode Characteristics

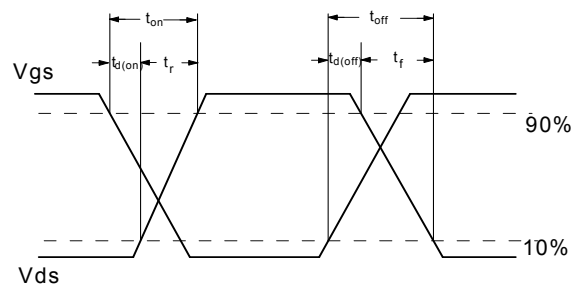
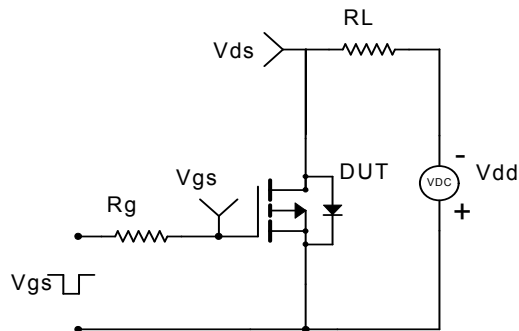


• Test circuit

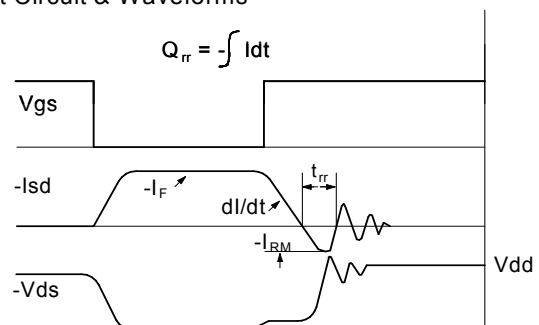
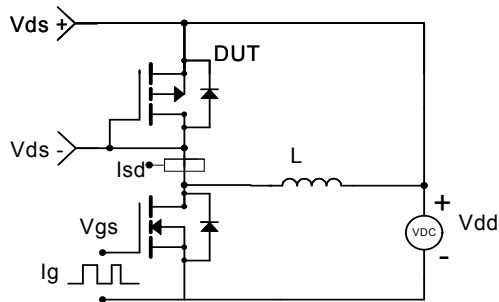
Gate Charge Test Circuit & Waveform



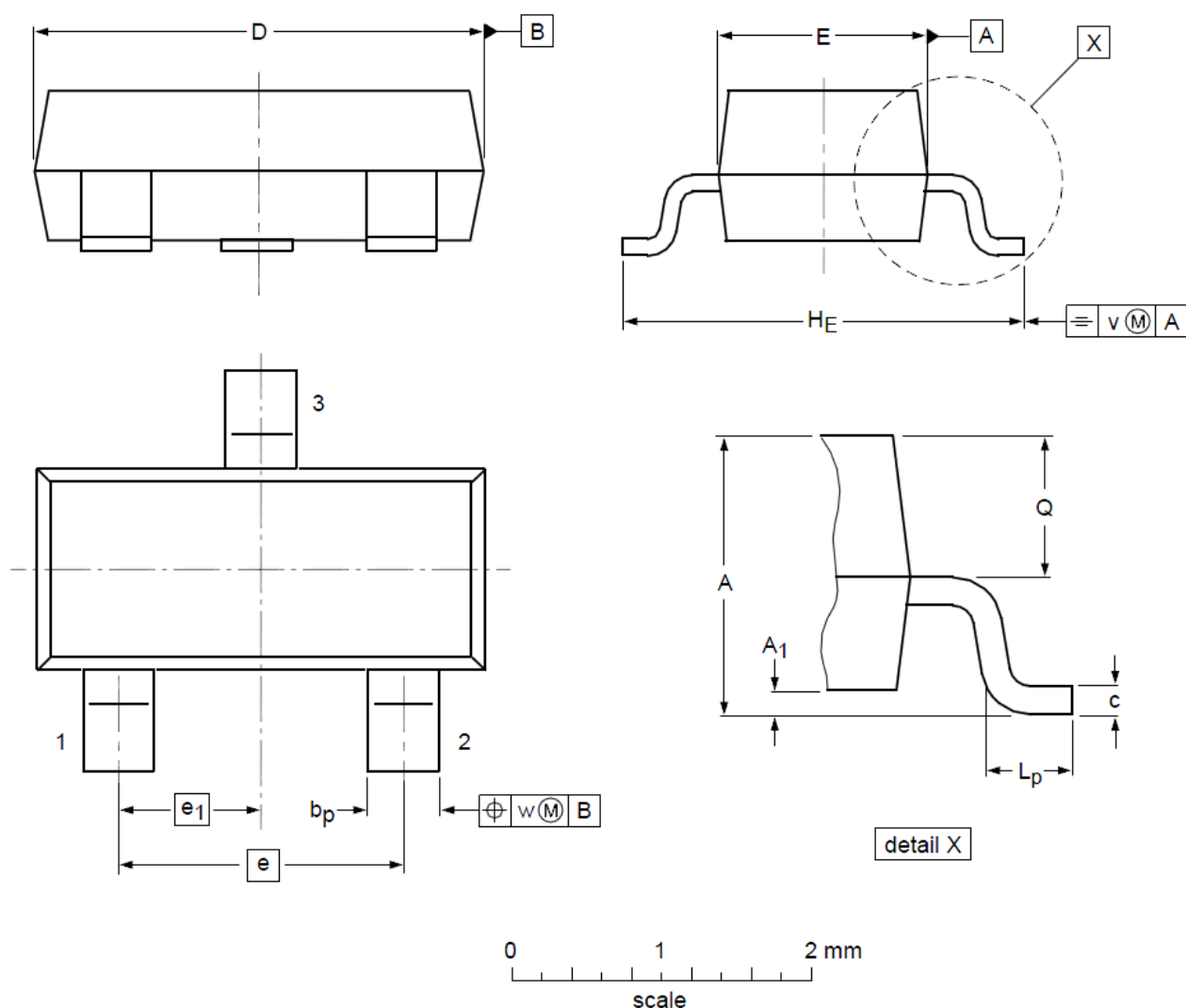
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



SOT23-3L Package Outline Dimensions



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	1.00	1.17	1.30	A ₁	0.01	0.05	0.10
b _p	0.35	0.39	0.50	c	0.10	0.20	0.26
D	2.70	2.90	3.10	E	1.30	1.58	1.70
e	--	1.90	--	e ₁	--	0.95	--
H _E	2.50	2.78	3.00	L _p	0.20	0.32	0.60
Q	0.23	0.27	0.33	v	--	0.20	--
w	--	0.20	--				