

Product Summary

Part #	V _{DS}	R _{DS(on)} .typ (@V _{GS} =10V)	R _{DS(on)} .typ (@V _{GS} =4.5V)	I _D
EFM3452A	30V	43mΩ	47mΩ	4A

Features

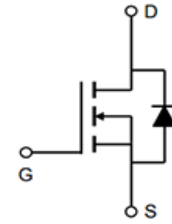
- Low R_{DS(on)} @V_{GS}=10V
- 4.5V Logic Level Control
- N Channel SOT23-3L Package
- Pb-Free, RoHS Compliant

Application

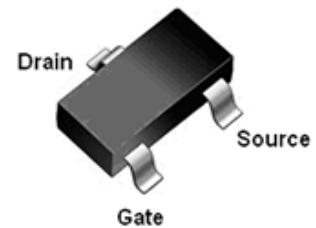
- DC-to-DC converters
- Power management in battery-driven portables
- Low-side load switch and charging switch for portable devices
- Switching circuits
- High-speed line driver

Ordering Information:

Part NO.	EFM3452A
Marking	BR****
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000



N-Channel MOSFET



SOT23-3L



Absolute Maximum Ratings (T_C=25°C)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±12	V
Drain Current-Continuous	I _D	4	A
Drain Current-Pulsed ^(Note 1)	I _{DM}	15	A
Maximum Power Dissipation	P _D	1.5	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}	90	°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 =250uA	30	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V V _{DS} =0V	--	--	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250uA	0.5	0.8	1.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V I _D =4A	--	43	47	mΩ
		V _{GS} =4.5V I _D =3A	--	47	65	mΩ
Dynamic Characteristics (Note4)						
Input Capacitance	C _{Iss}	V _{DS} =15V V _{GS} =0V F=1.0MHz	--	235	--	PF
Output Capacitance	C _{Oss}		--	35	--	PF
Reverse Transfer Capacitance	C _{rSS}		--	18	--	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V I _D =3.8A V _{GS} =10V R _G =3Ω,	--	3.5	--	nS
Turn-on Rise Time	t _r		--	1.5	--	nS
Turn-Off Delay Time	t _{d(off)}		--	17.5	--	nS
Turn-Off Fall Time	t _f		--	2.5	--	nS
Total Gate Charge	Q _g	V _{DS} =15V I _D =3.8A V _{GS} =10V	--	10	--	nC
Gate-Source Charge	Q _{gs}		--	0.95	--	nC
Gate-Drain Charge	Q _{gd}		--	1.6	--	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V I _S =4A	--	0.75	1.0	V
Diode Forward Current (Note 2)	I _S		--	--	4	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

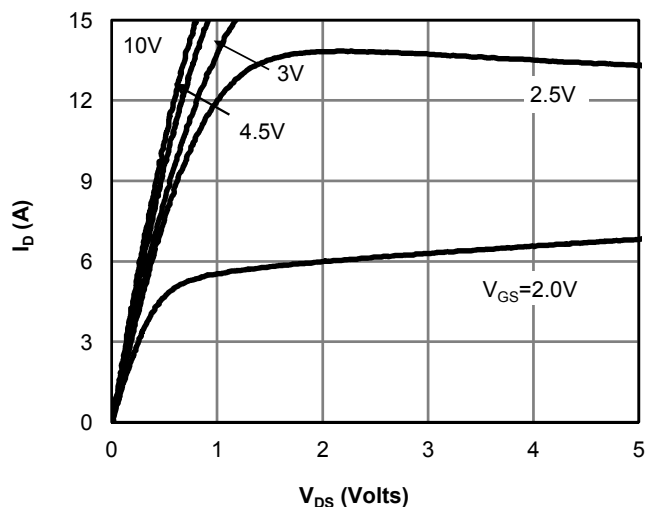


Fig 1: On-Region Characteristics (Note E)

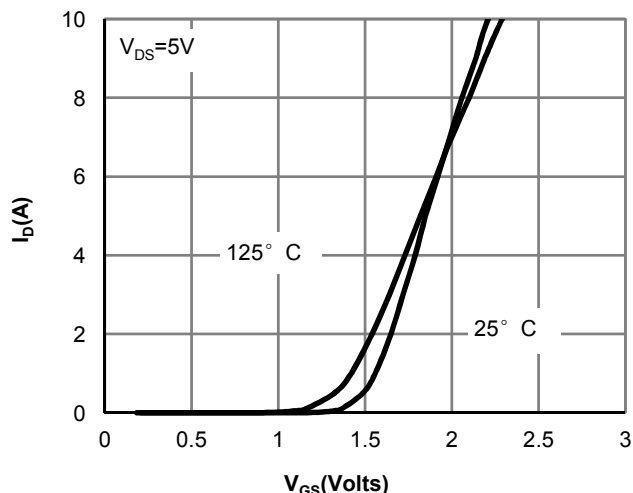


Figure 2: Transfer Characteristics (Note E)

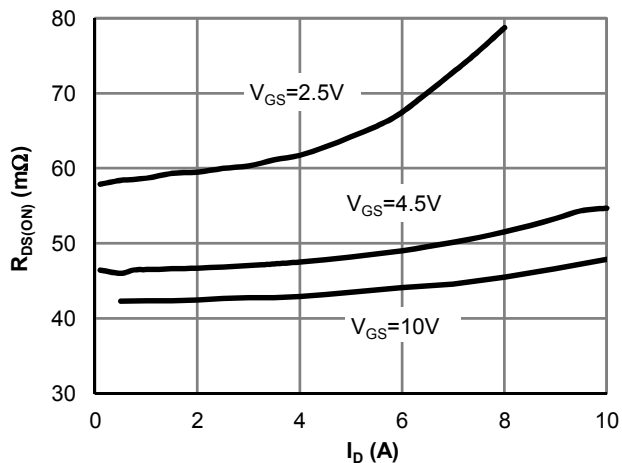


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

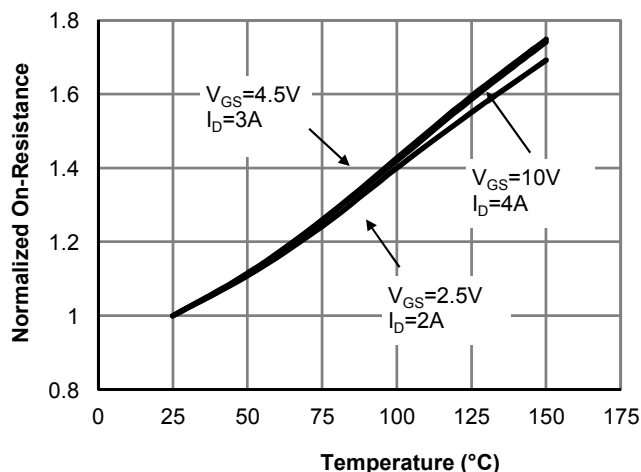


Figure 4: On-Resistance vs. Junction Temperature (Note E)

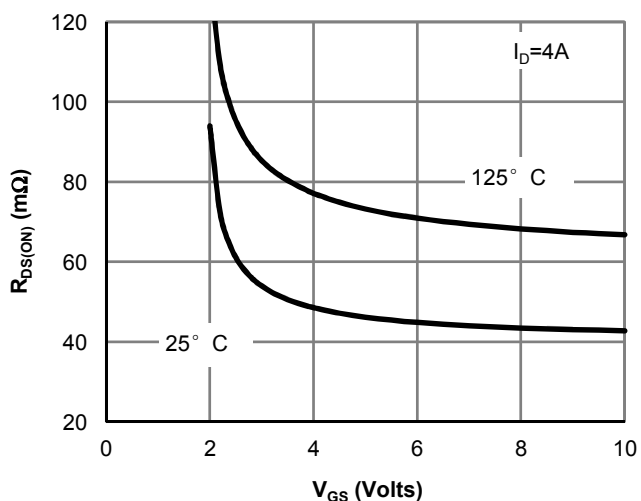


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

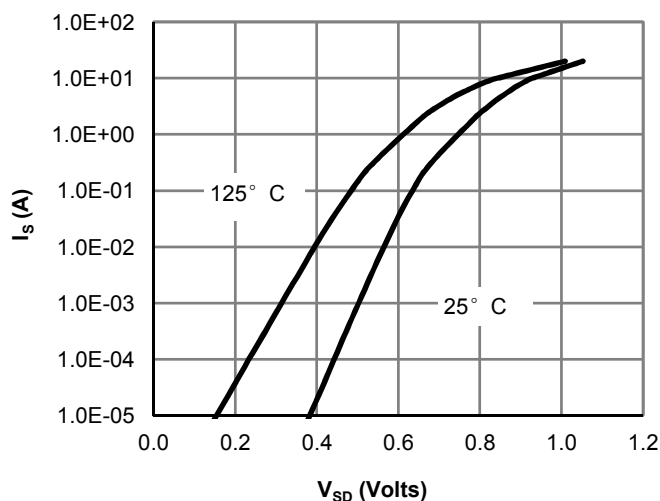
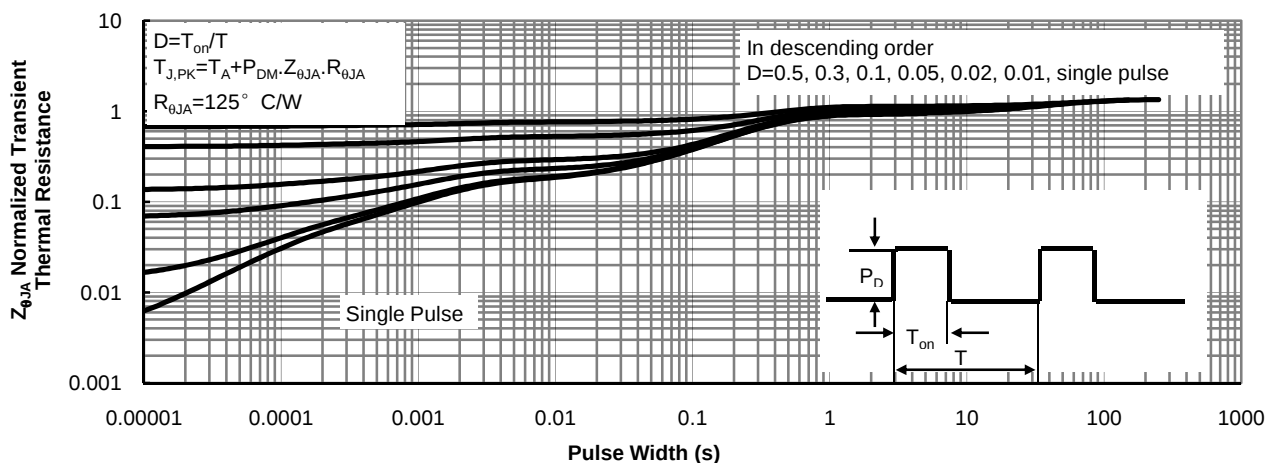
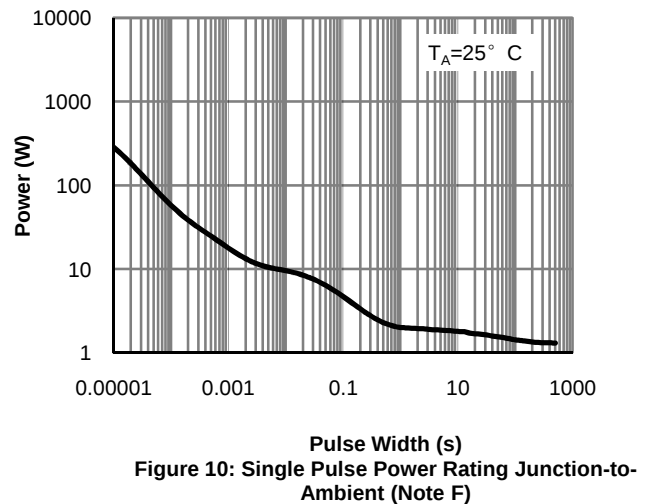
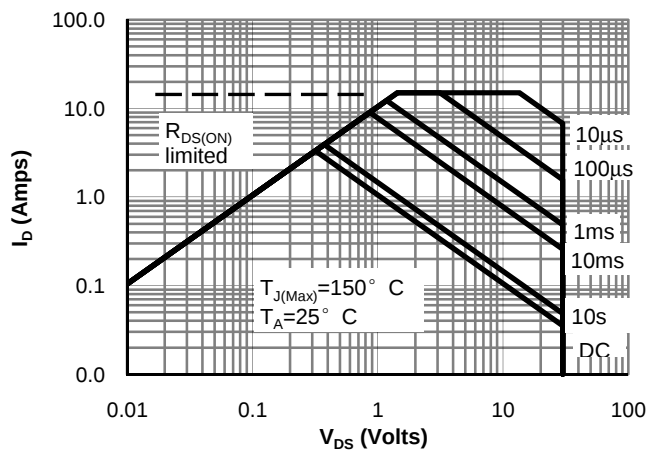
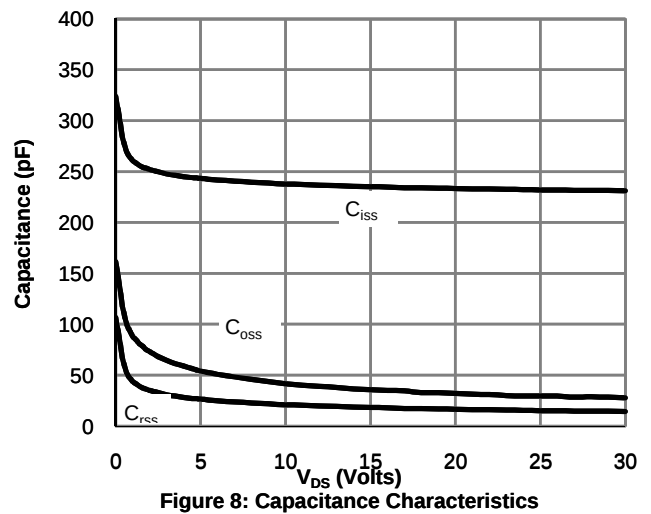
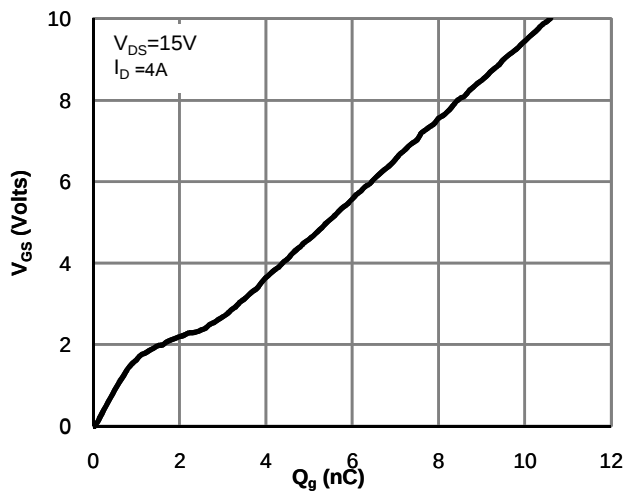
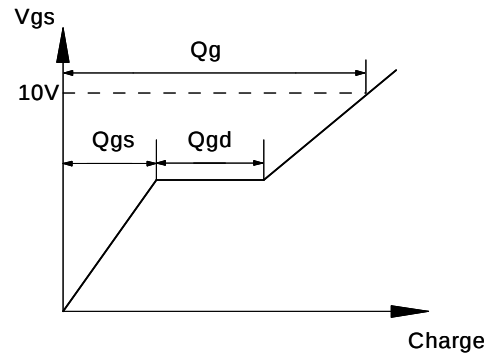
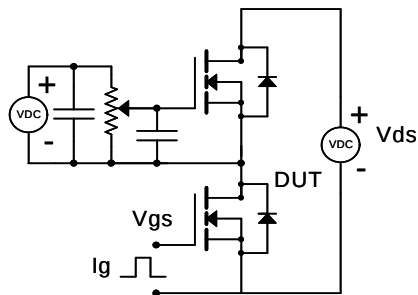


Figure 6: Body-Diode Characteristics (Note E)

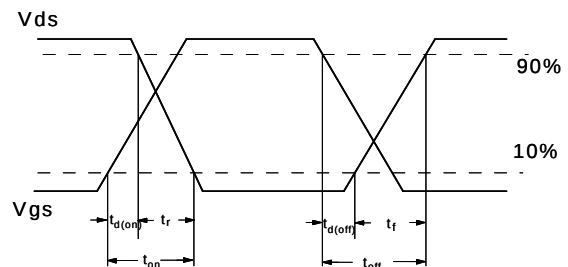
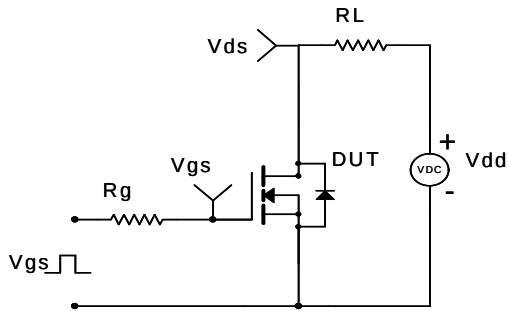


• Test circuit

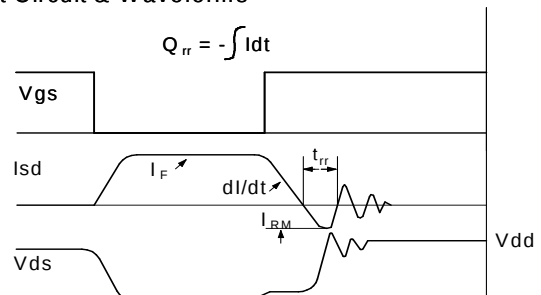
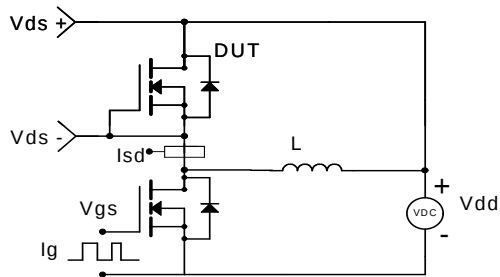
Gate Charge Test Circuit & Waveform



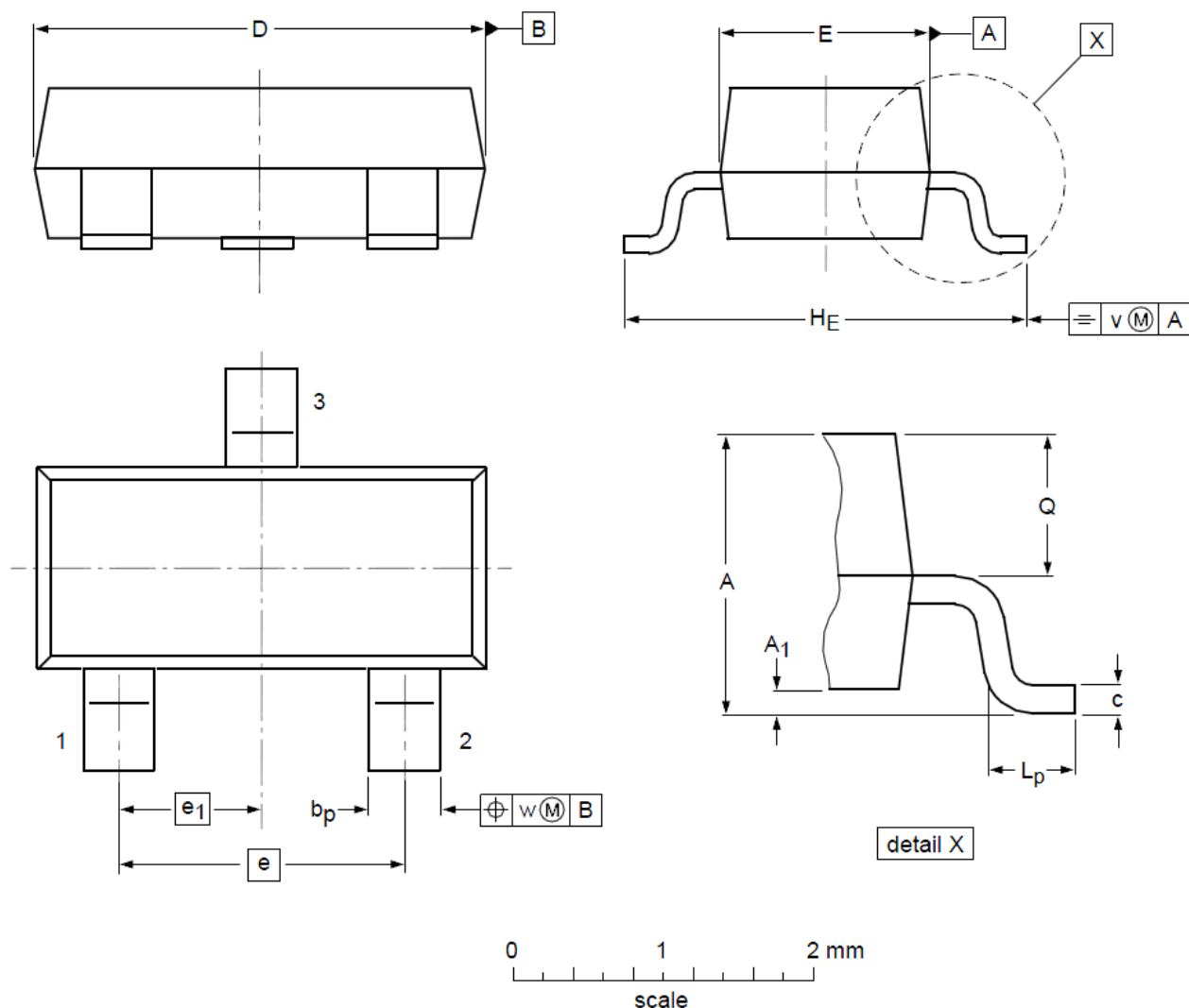
Resistive Switching Test Circuit & Waveforms



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	--				