

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Source to Source Breakdown Voltage	$V_{(\text{BR})\text{SSS}}$	$I_S = 1 \text{ mA}, V_{GS} = 0 \text{ V}$	24			V
Zero-Gate Voltage Source Current	I_{SSS}	$V_{SS} = 19.2 \text{ V}, V_{GS} = 0 \text{ V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 8 \text{ V}, V_{SS} = 0 \text{ V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{SS} = 10 \text{ V}, I_S = 1 \text{ mA}$	0.4		1.3	V
Static Source to Source On-State Resistance	$R_{\text{SS(on)}}$	$I_S = 5 \text{ A}, V_{GS} = 4.5 \text{ V}$	1.6	2.4	2.95	$\text{m}\Omega$
		$I_S = 5 \text{ A}, V_{GS} = 3.8 \text{ V}$	1.7	2.5	3.0	$\text{m}\Omega$
		$I_S = 5 \text{ A}, V_{GS} = 3.1 \text{ V}$	2.0	2.9	4.7	$\text{m}\Omega$
		$I_S = 5 \text{ A}, V_{GS} = 2.5 \text{ V}$	2.2	3.6	7.4	$\text{m}\Omega$
Gate Resistance	R_g	$f = 1 \text{ MHz}$		310		Ω
Total Gate Charge	Q_g	$V_{SS} = 11.5 \text{ V}, V_{GS} = 4.5 \text{ V}, I_S = 5 \text{ A}$		49		nC
Turn-ON Delay Time	$t_{\text{d(on)}}$	$V_{SS} = 11.5 \text{ V}, V_{GS} = 4.5 \text{ V}, R_L = 2.3 \Omega$		0.6		μs
Rise Time	t_r	$R_G = 0 \Omega$ Switching Test Circuit		1.6		μs
Turn-OFF Delay Time	$t_{\text{d(off)}}$			7.3		μs
Fall Time	t_f			3.2		μs
Forward Source to Source Voltage	$V_{F(\text{S-S})}$	$I_S = 3 \text{ A}, V_{GS} = 0 \text{ V}$		0.75	1.2	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

SWITCHING TEST CIRCUIT

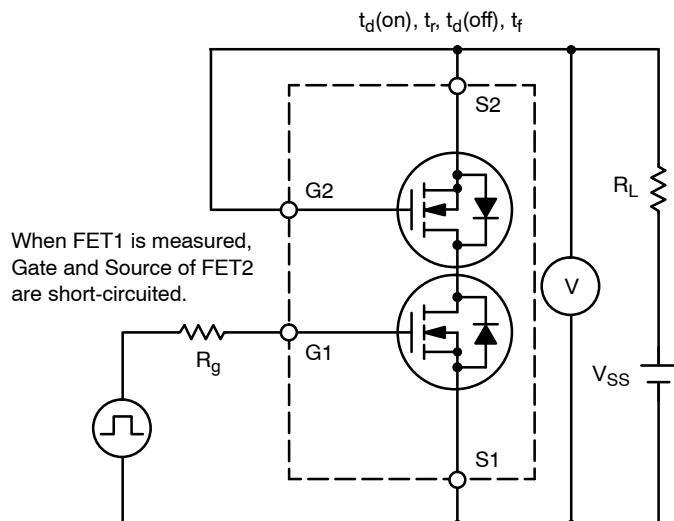


Figure 1. Switching Test Circuit

DEPENDENCY FIGURES

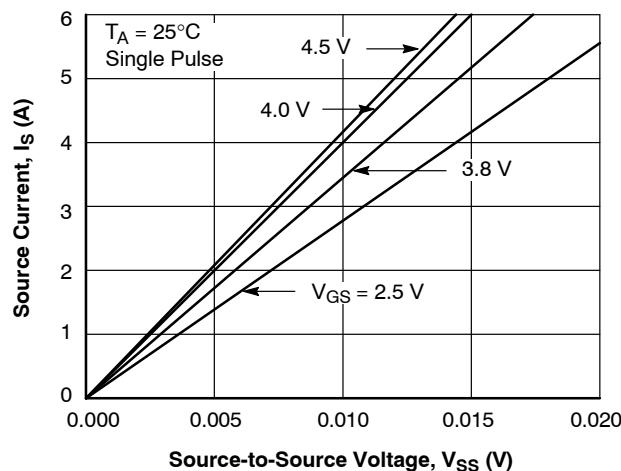


Figure 2. On-Region Characteristics

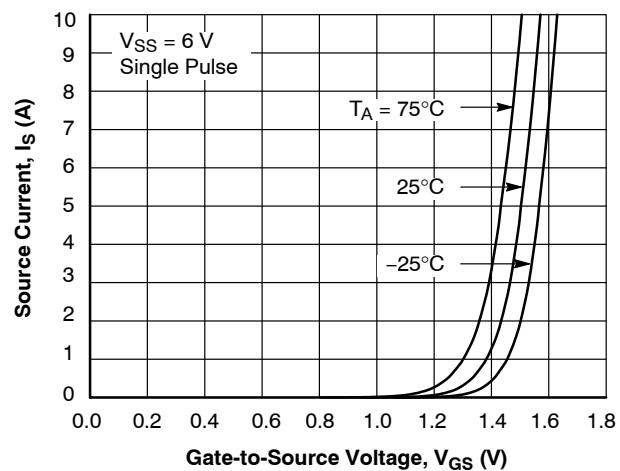


Figure 3. Transfer Characteristics

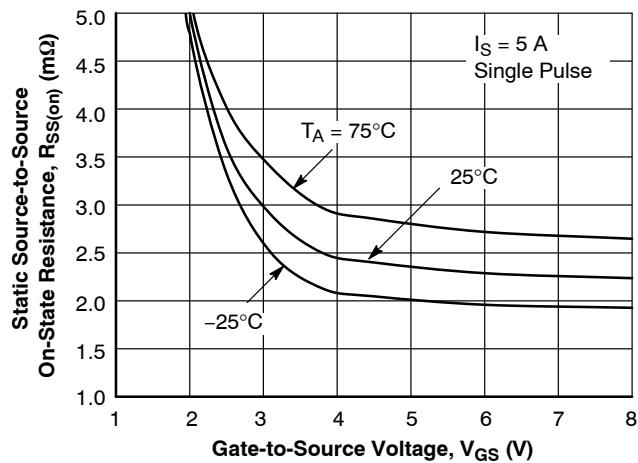


Figure 4. On-Resistance vs. Gate-to-Source Voltage

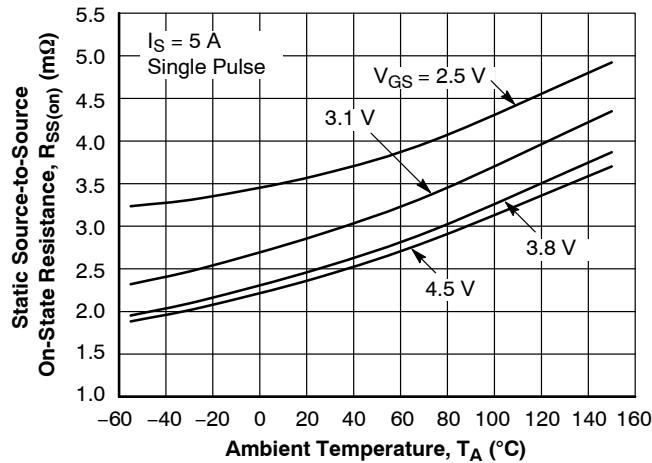


Figure 5. On-Resistance vs. Temperature

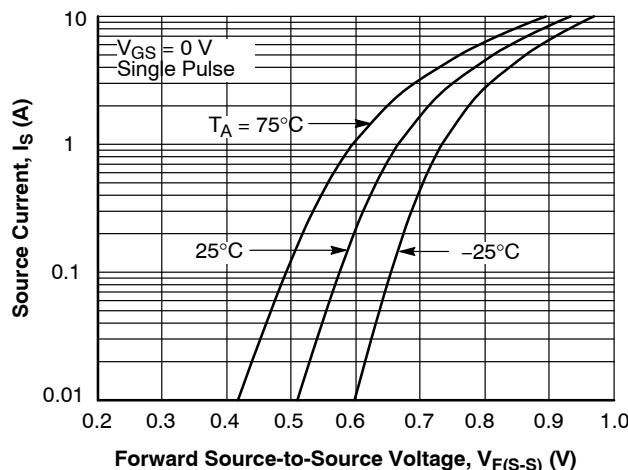


Figure 6. Forward Source-to-Source Voltage vs. Current

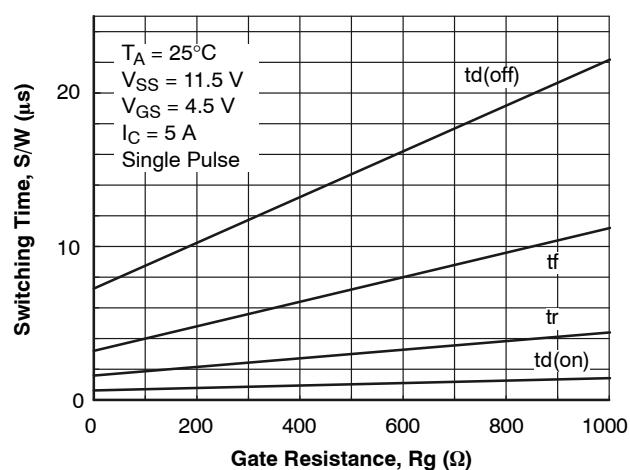


Figure 7. Switching Time vs. Gate Resistance (1)

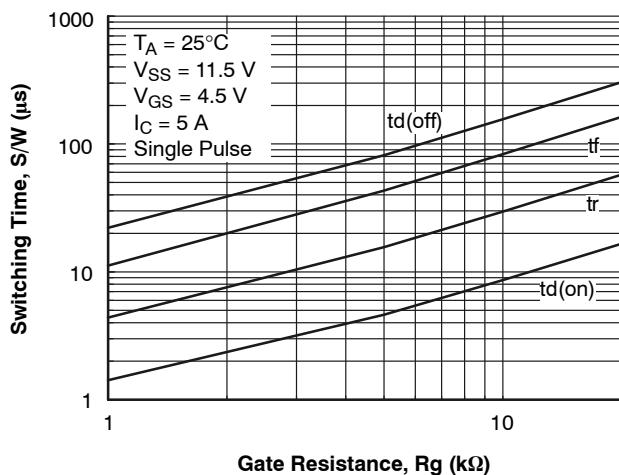


Figure 8. Switching Time vs. Gate Resistance (2)

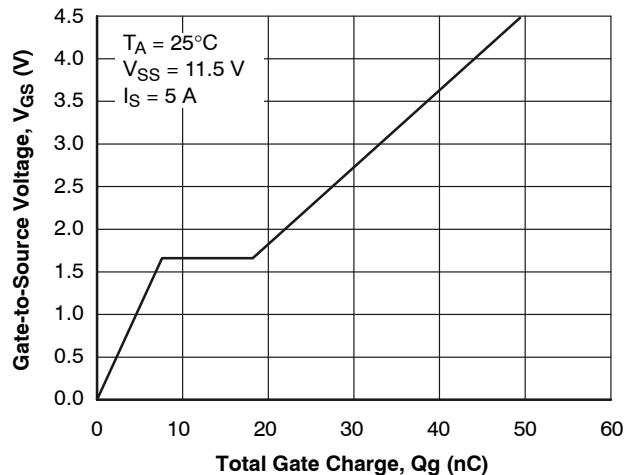


Figure 9. Gate-to-Source Voltage vs. Total Charge

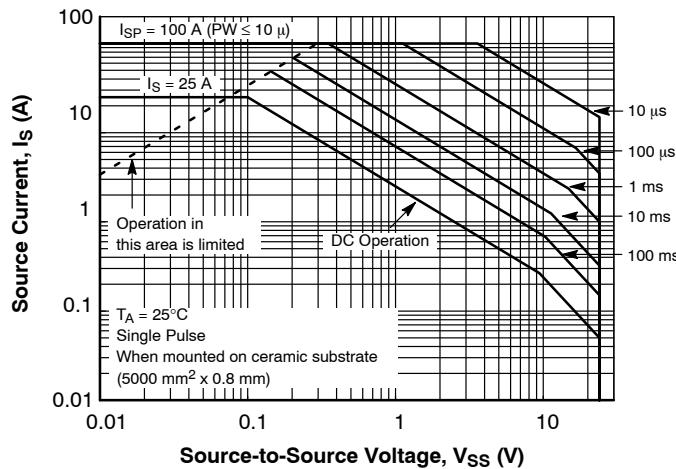


Figure 10. Safe Operating Area

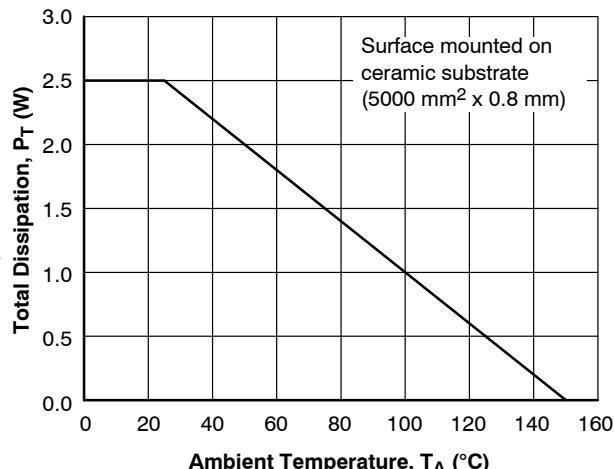


Figure 11. Total Dissipation vs. Temperature

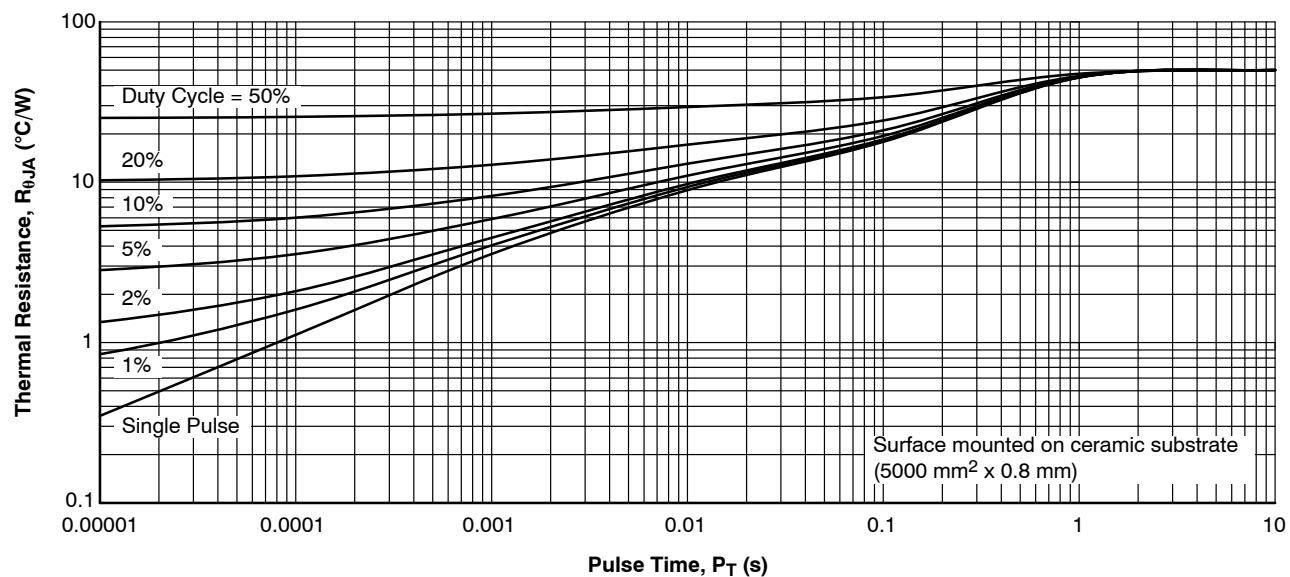


Figure 12. Thermal Response

EFC4K110NUZ

ORDERING INFORMATION

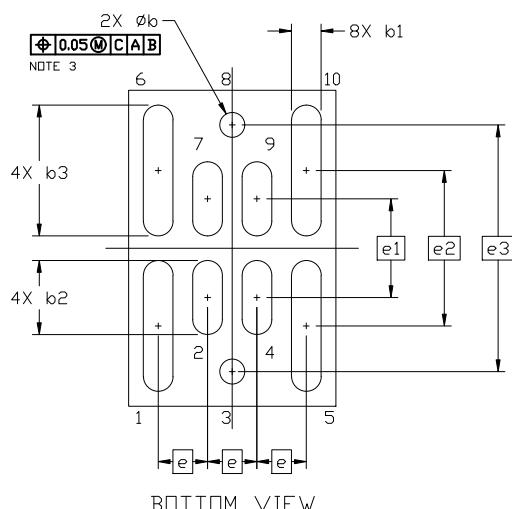
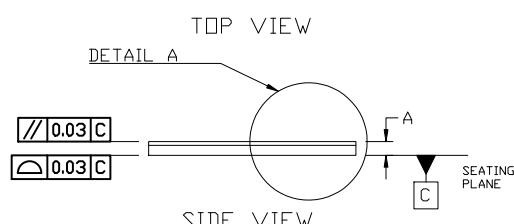
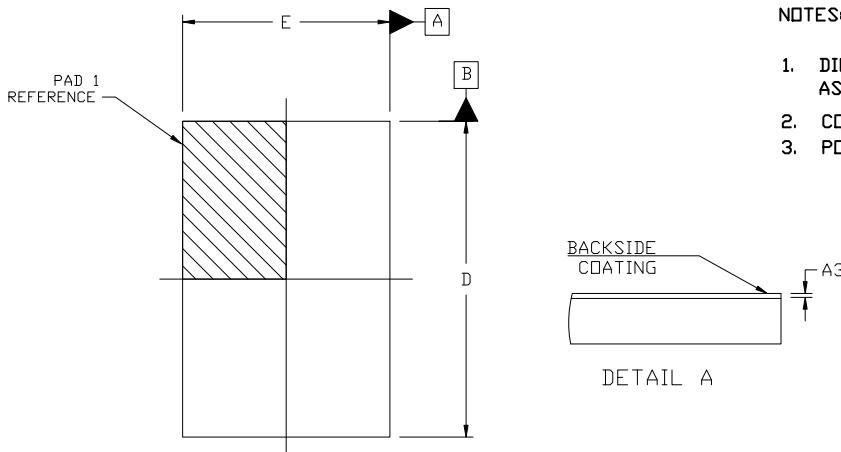
Device	Marking	Package	Shipping [†] (Qty / Packing)
EFC4K110NUZTDG	PH	WLCSP10, 3.20 x 2.10 x 0.14 (Pb-Free / Halogen Free)	5000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Note on usage: Since the EFC4K110NUZ is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

WLCSP10 3.2x2.1x0.14
CASE 567XT
ISSUE O

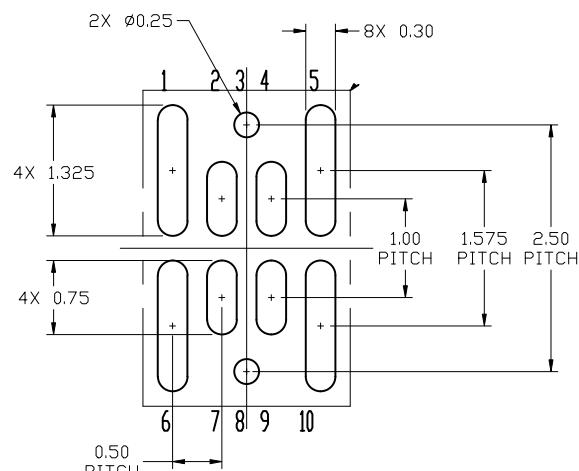
DATE 02 APR 2019



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. POSITIONAL TOLERANCE APPLIES TO ALL PADS.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.11	0.14	0.17
A3			0.04 REF
b	0.22	0.25	0.28
b1	0.27	0.30	0.33
b2	0.72	0.75	0.78
b3	1.295	1.325	1.355
D	3.17	3.20	3.23
E	2.07	2.10	2.13
e	0.50 BSC		
e1	1.0 BSC		
e2	1.575 BSC		
e3	2.50 BSC		

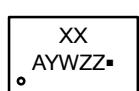


RECOMMENDED
MOUNTING FOOTPRINT*

* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/1.

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.

**GENERIC
MARKING DIAGRAM***



XX = Specific Device Code
A = Assembly Location
Y = Year
W = Work Week
ZZ = Assembly Lot Code
■ = Pb-Free Package

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DESCRIPTION:	WLCSP10 3.2x2.1x0.14	PAGE 1 OF 1

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