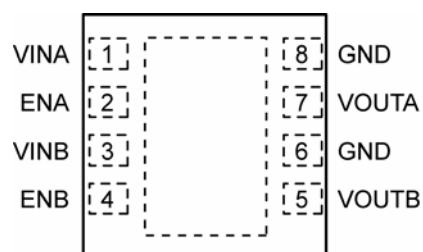


## Ordering Information

Part Number	Part Marking*	Soft-Start	Load Discharge	Pb-Free Package
MIC94066YML	P66			2x2 mm MLF™
MIC94067YML	P67		•	
MIC94068YML	P68	•		
MIC94069YML	P69	•	•	

\* Note: Over bar symbol may not be to scale

## Pin Configuration



Top View  
2x2 mm MLF™ (code)

## Pin Description

Pin Number	Pin Name	Pin Function
1	V <sub>INA</sub>	Source of P-channel MOSFET.
2	ENA	Enable (Input): Active-high CMOS compatible control input for switch A. Do not leave floating.
3	V <sub>INB</sub>	Source of P-channel MOSFET.
4	ENB	Enable (Input): Active-high CMOS compatible control input for switch A. Do not leave floating.
5	V <sub>OUTB</sub>	Drain of P-channel MOSFET.
6	GND	Ground. Both ground pins must be grounded.
7	V <sub>OUTA</sub>	Drain of P-channel MOSFET.
8	GND	Ground. Both ground pins must be grounded.

**Absolute Maximum Ratings<sup>(1)</sup>**

Input Voltage ( $V_{IN}$ )	+6V
Enable Voltage ( $V_{EN}$ )	+6V
Continuous Drain Current ( $I_D$ ) <sup>(3)</sup>	
$T_A = 25^\circ\text{C}$	$\pm 2\text{A}$
$T_A = 85^\circ\text{C}$	$\pm 1.4\text{A}$
Pulsed Drain Current ( $I_{DP}$ ) <sup>(4)</sup>	$\pm 6\text{A}$
Continuous Diode Current ( $I_S$ ) <sup>(4)</sup>	–50mA
Storage Temperature ( $T_S$ )	–55°C to +150°C
EDS Rating – HBM <sup>(6)</sup>	4KV

**Operating Ratings<sup>(2)</sup>**

Input Voltage ( $V_{IN}$ )	+1.7 to +5.5V
Junction Temperature ( $T_A$ )	–40°C to +125°C
Package Thermal Resistance	
2x2 MLF ( $\Theta_{JA}$ )	90°C/W
2x2 MLF ( $\Theta_{JC}$ ) <sup>(3)</sup>	45°C/W

**Electrical Characteristics**

$V_{IN} = 5\text{V}$ ;  $T_A = 25^\circ\text{C}$ , bold values indicate  $-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$ , unless noted.

Symbol	Parameter	Condition	Min	Typ	Max	Units
$V_{EN\_TH}$	Enable Threshold Voltage	$V_{IN} = 1.8\text{V to } 4.5\text{V}$ , $I_D = -250\mu\text{A}$	0.5		1.2	V
		$V_{IN} = 1.7\text{V to } 4.5\text{V}$ , $I_D = -250\mu\text{A}$	0.4		1.2	V
$I_{EN}$	Enable Input Current	$V_{IN} = V_{EN} = 5.5\text{V}$		2	4	$\mu\text{A}$
$I_{VIN}$	OFF State Leakage Current	$V_{IN} = +5.5\text{V}$ , $V_{EN} = 0\text{V}$			1	$\mu\text{A}$
$R_{DS(ON)}$	P-Channel Drain to Source On Resistance	$V_{IN} = +4.5\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$		85	115	m $\Omega$
		$V_{IN} = +3.6\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$		100	140	m $\Omega$
		$V_{IN} = +2.5\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$		145	200	m $\Omega$
		$V_{IN} = +1.8\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$		155	215	m $\Omega$
		$V_{IN} = +1.7\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$		165	225	m $\Omega$
$R_{SHUTDOWN}$	Turn-off Impedance	$V_{IN} = +3.6\text{V}$ , $I_{TEST} = 1\text{mA}$ , $V_{EN} = 0\text{V}$ MIC94067, 69		200	300	$\Omega$

**Dynamic**

Symbol	Parameter	Condition	Min	Typ	Max	Units
$t_{ON\_DLY}$	Turn-On Delay Time	$V_{IN} = +3.6\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$ MIC94066, 67		0.85	1.5	$\mu\text{s}$
		$V_{IN} = +3.6\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$ MIC94068, 69		700	1200	$\mu\text{s}$
$t_{ON\_RISE}$	Turn-On Rise Time	$V_{IN} = +3.6\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$ MIC94066, 67	0.5	1	5	$\mu\text{s}$
		$V_{IN} = +3.6\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$ MIC94068, 69	500	800	1500	$\mu\text{s}$
$t_{OFF\_DLY}$	Turn-Off Delay Time	$V_{IN} = +3.6\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$ MIC94066, 67		115	200	ns
		$V_{IN} = +3.6\text{V}$ , $I_D = -100\text{mA}$ , $V_{EN} = 1.5\text{V}$ MIC94068, 69		100	200	ns

**Dynamic (cont.)**

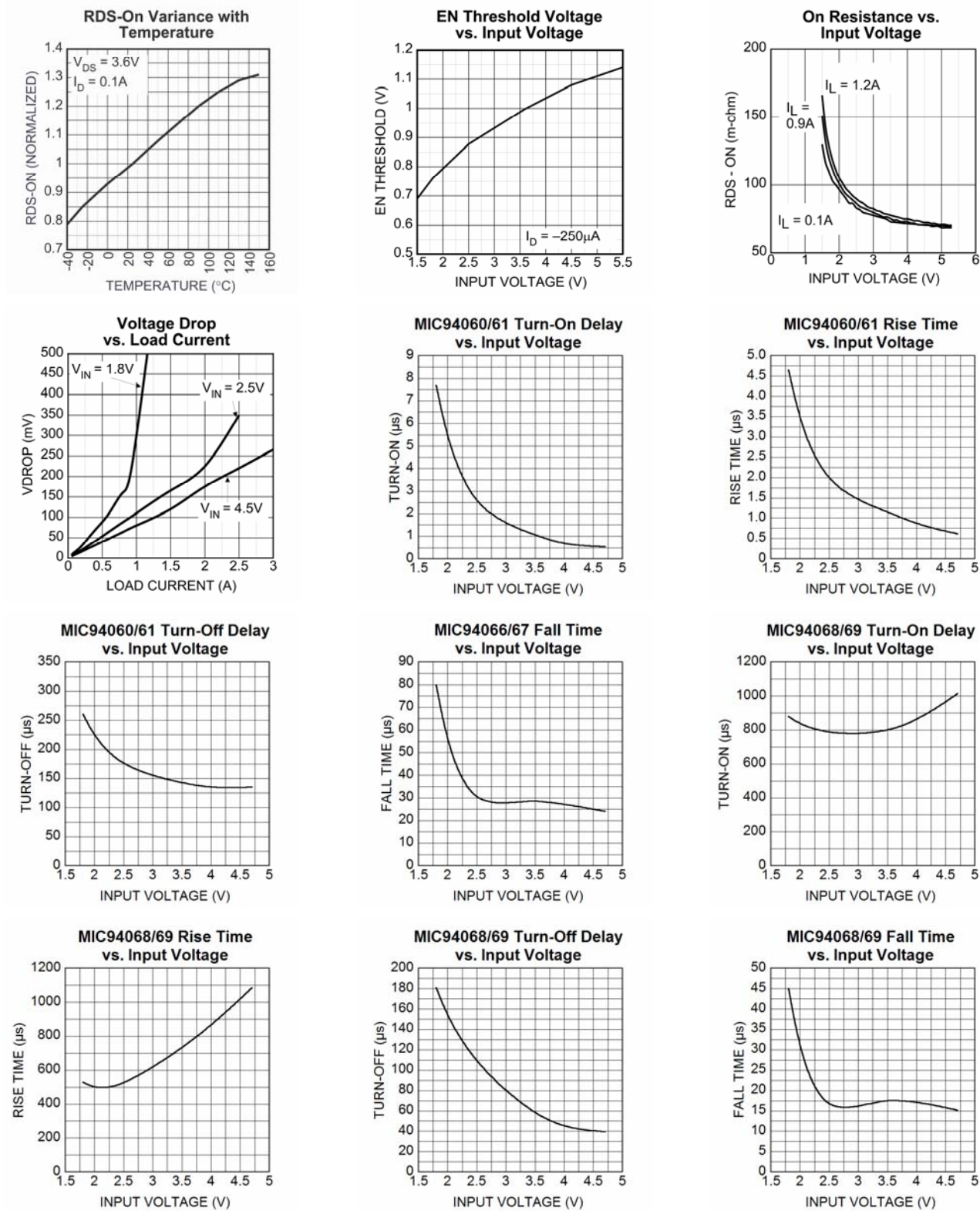
$t_{\text{OFF\_FALL}}$	Turn-Off Fall Time	$V_{\text{IN}} = +3.6\text{V}$ , $I_{\text{D}} = -100\text{mA}$ , $V_{\text{EN}} = 1.5\text{V}$ MIC94066, 67		60	100	ns
		$V_{\text{IN}} = +3.6\text{V}$ , $I_{\text{D}} = -100\text{mA}$ , $V_{\text{EN}} = 1.5\text{V}$ MIC94068, 69		60	100	ns

## Notes:

1. Exceeding the absolute maximum rating may damage the device.
2. The device is not guaranteed to function outside its operating rating.
3. With backside thermal contact to PCB.
4. Pulse width  $< 300\mu\text{s}$  with  $< 2\%$  duty cycle.
5. Continuous body diode current conduction (reverse conduction, i.e.  $V_{\text{OUT}}$  to  $V_{\text{IN}}$ ) is not recommended.
6. Devices are ESD sensitive. Handling precautions recommended. HBM (Human body model), 1.5k in series with 100pF.

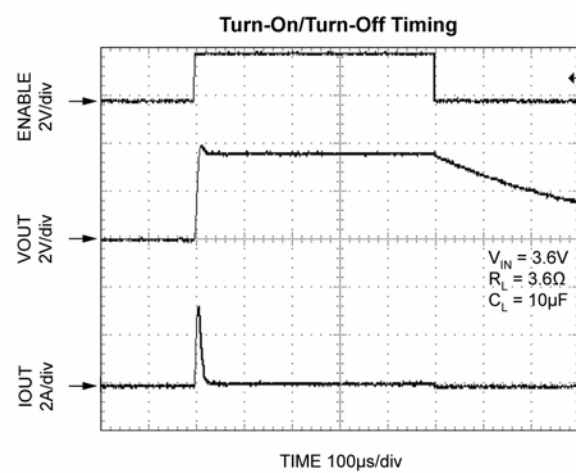
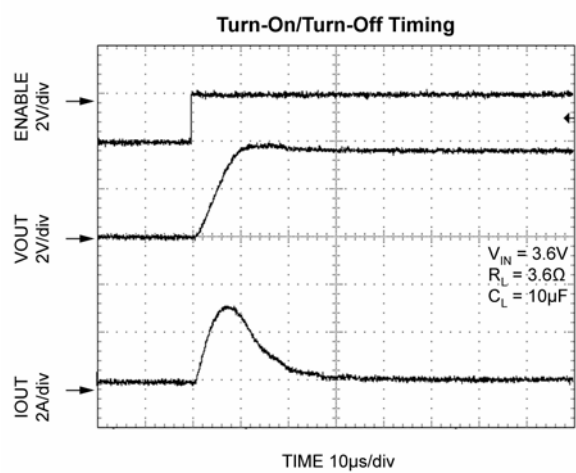
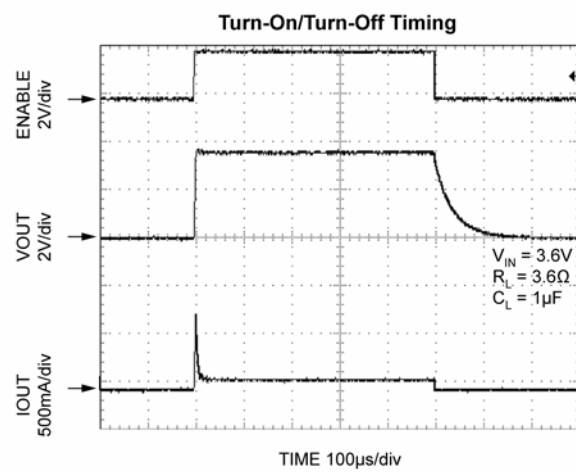
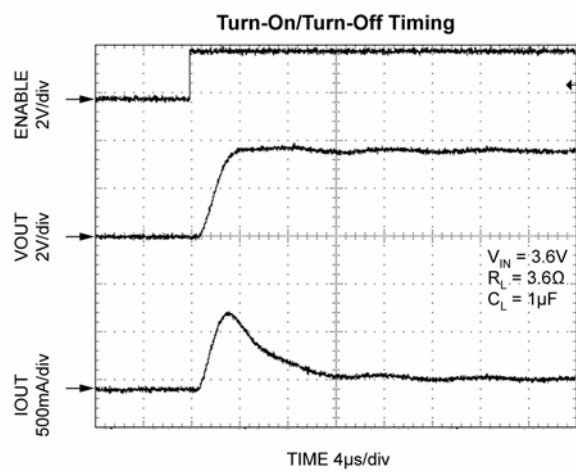
## Typical Characteristics

$R_L = 100\text{mA}$ ,  $C_L = 0\mu\text{F}$  for the following plots

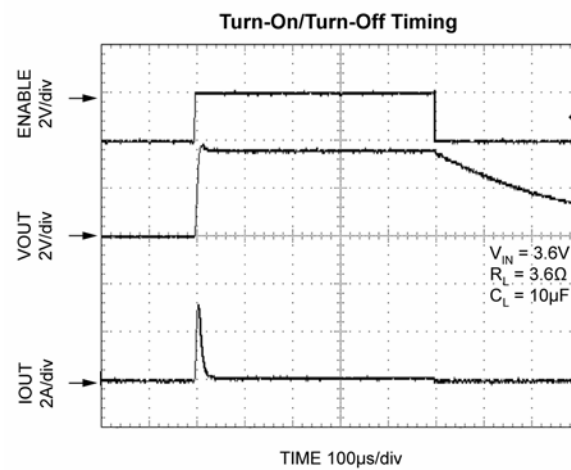
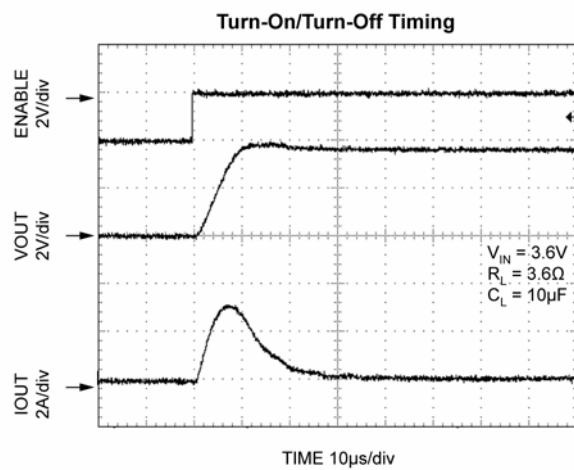
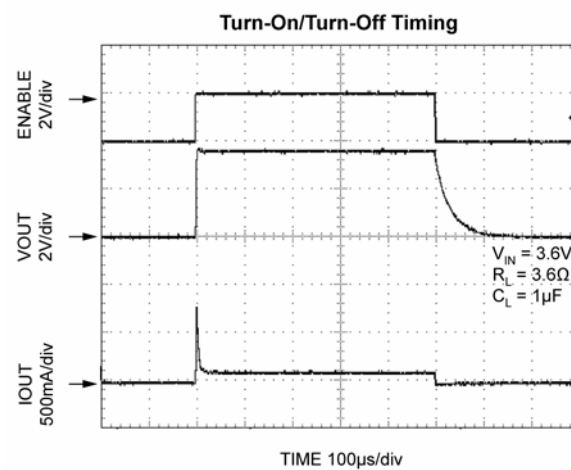
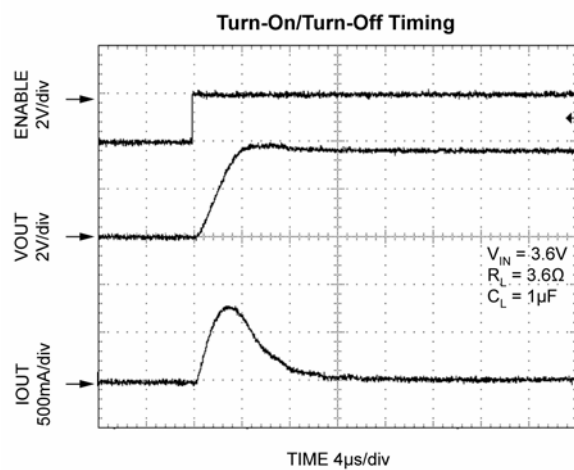


## Functional Characteristics

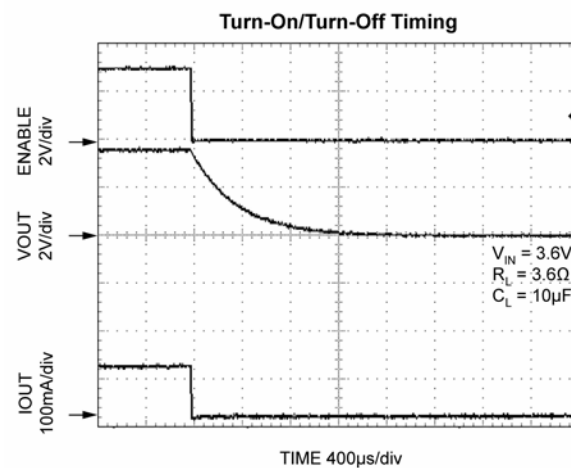
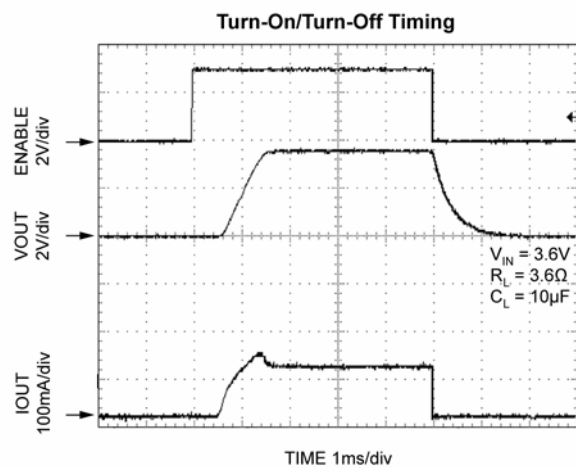
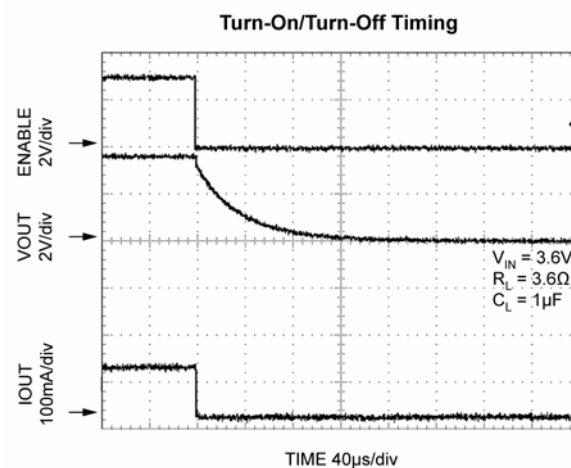
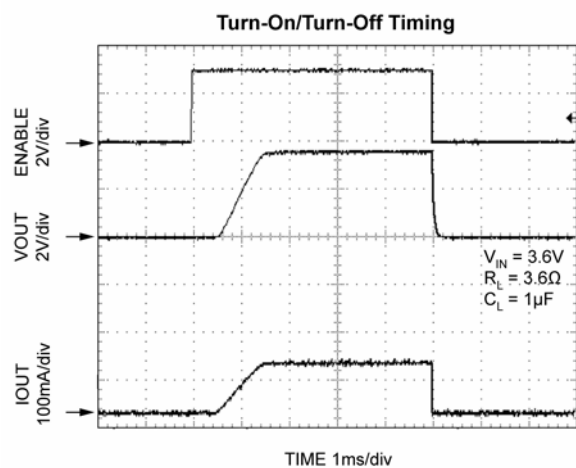
### MIC94066



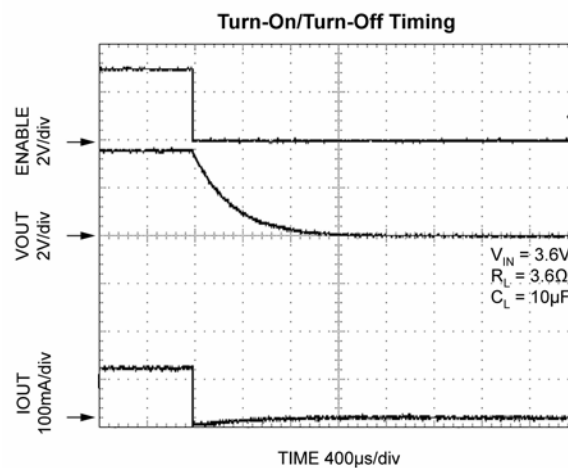
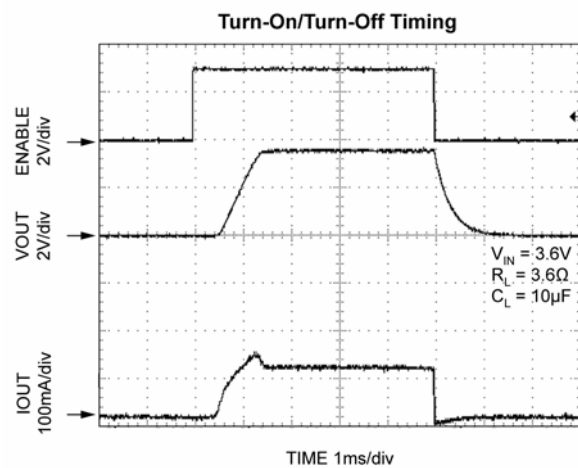
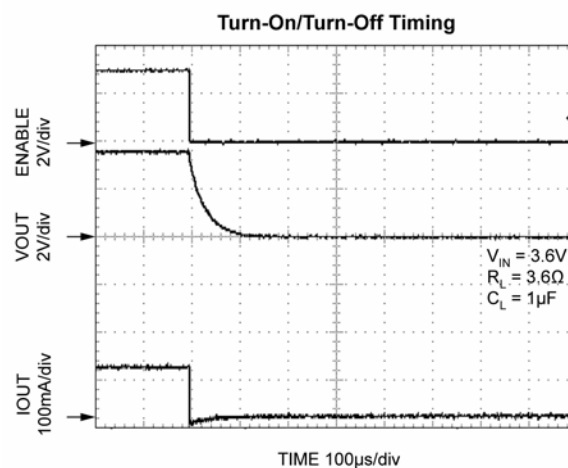
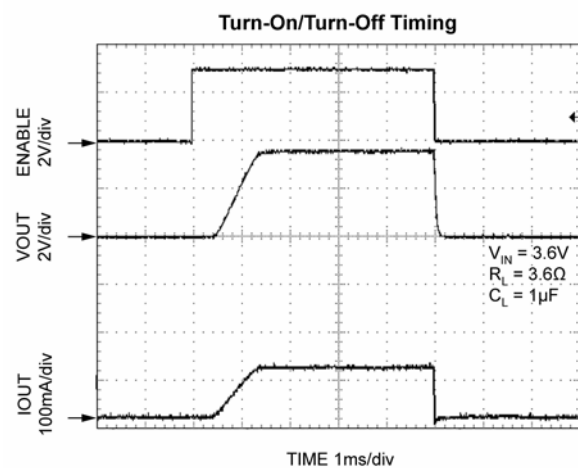
## MIC94067



## MIC94068

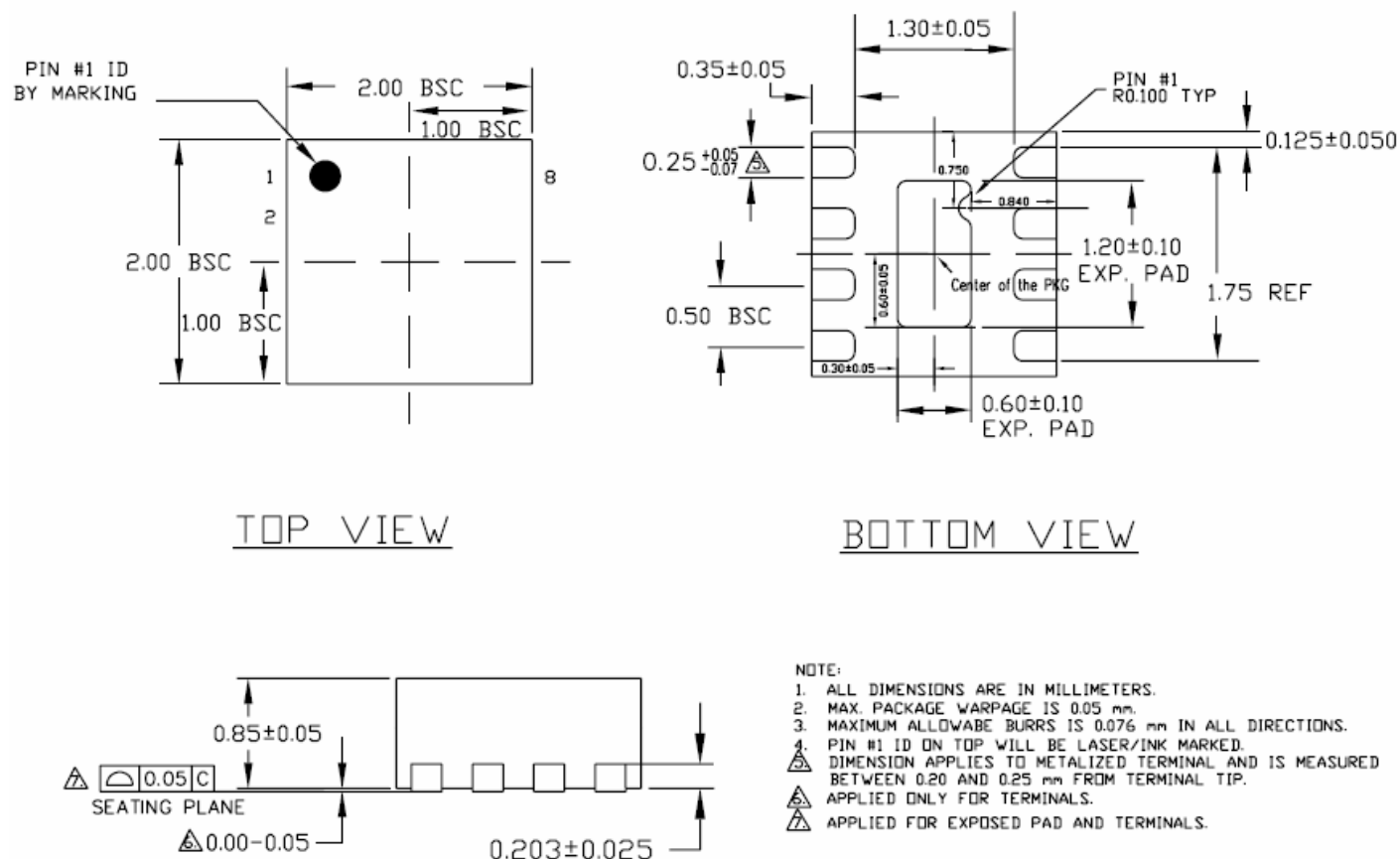


## MIC94069





## Package Information



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