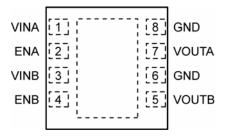
# **Ordering Information**

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

<sup>\*</sup> 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>IN</sub> A	Source of P-channel MOSFET.
2	ENA Enable (Input): Active-high CMOS compatible control input for switch A. D. leave floating.	
3 V <sub>IN</sub> B Source of P-		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>OUT</sub> B	Drain of P-channel MOSFET.
6	GND	Ground. Both ground pins must be grounded.
7	V <sub>OUT</sub> A	Drain of P-channel MOSFET.
8	GND	Ground. Both ground pins must be grounded.

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

Input Voltage (V <sub>IN</sub> )	
Enable Voltage (V <sub>EN</sub> )	+6V
Continuous Drain Current (I <sub>D</sub> ) (3)	
T <sub>A</sub> = 25°C	±2A
T <sub>A</sub> = 85°C	
Pulsed Drain Current (I <sub>DP</sub> ) (4)	
Continuous Diode Current (I <sub>S</sub> ) (4)	–50mA
Storage Temperature (T <sub>s</sub> )	-55°C to +150°C
EDS Rating – HBM (6)	4KV

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

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

### **Electrical Characteristics**

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

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

# **Dynamic**

Symbol	Parameter	Condition	Min	Тур	Max	Units
t <sub>ON_DLY</sub>	Turn-On Delay Time	$V_{IN} = +3.6V$ , ID = $-100$ mA, $V_{EN} = 1.5V$		0.85	1.5	μs
		MIC94066, 67				
		$V_{IN} = +3.6V$ , ID = $-100$ mA, $V_{EN} = 1.5V$		700	1200	μs
		MIC94068, 69				
t <sub>ON_RISE</sub>	Turn-On Rise Time	$V_{IN} = +3.6V$ , ID = $-100$ mA, $V_{EN} = 1.5V$	0.5	1	5	μs
		MIC94066, 67				
		$V_{IN} = +3.6V$ , ID = $-100$ mA, $V_{EN} = 1.5V$	500	800	1500	μs
		MIC94068, 69				
t <sub>OFF_DLY</sub>	Turn-Off Delay Time	$V_{IN}$ = +3.6V, ID = -100mA, $V_{EN}$ = 1.5V		115	200	ns
		MIC94066, 67				
		$V_{IN}$ = +3.6V, ID = -100mA, $V_{EN}$ = 1.5V		100	200	ns
		MIC94068, 69				

# Dynamic (cont.)

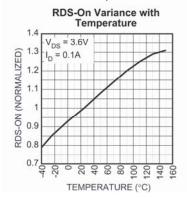
t <sub>OFF_FALL</sub>	Turn-Off Fall Time	$V_{IN}$ = +3.6V, ID = -100mA, $V_{EN}$ = 1.5V	60	100	ns
		MIC94066, 67			
		$V_{IN}$ = +3.6V, ID = -100mA, $V_{EN}$ = 1.5V	60	100	ns
		MIC94068, 69			

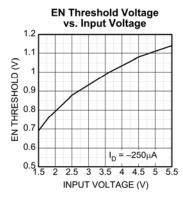
#### Notes:

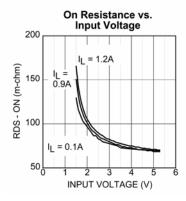
- 1. Exceeding the absolute maximum rating may damage the device.
- 2. The device is not guaranteed to function outside its operating rating.
- 3. With backside thermal contact to PCB.
- 4. Pulse width <300µs with < 2% duty cycle.
- 5. Continuous body diode current conduction (reverse conduction, i.e.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

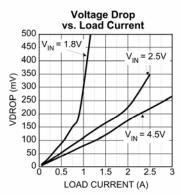
## **Typical Characteristics**

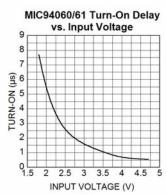
 $R_L = 100 \text{mA}$ ,  $C_L = 0 \mu F$  for the following plots

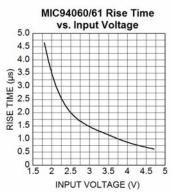


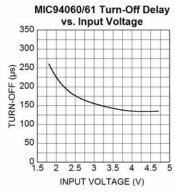


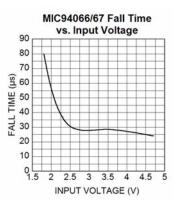


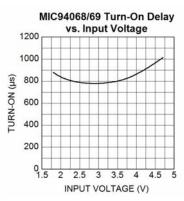


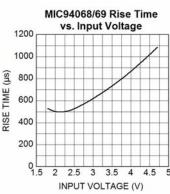


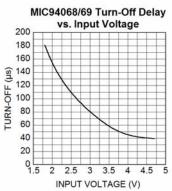


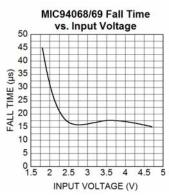




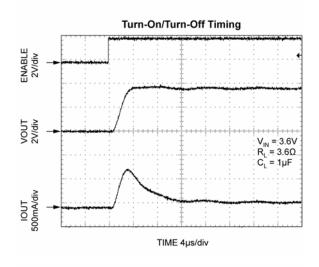


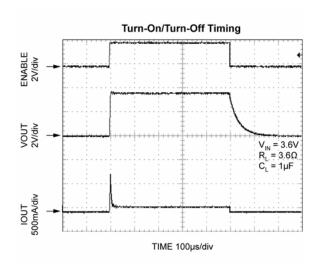


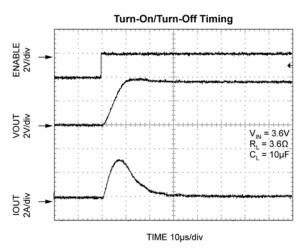


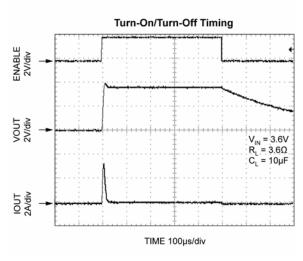


# **Functional Characteristics MIC94066**

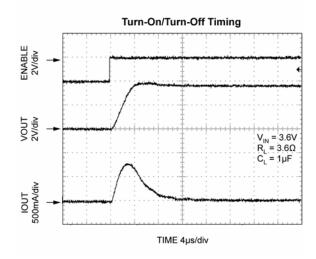


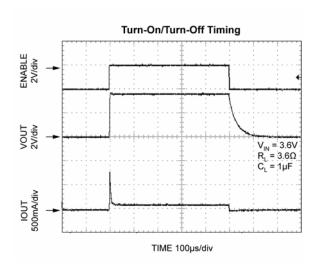


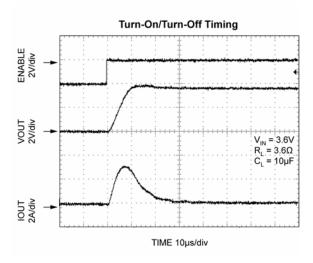


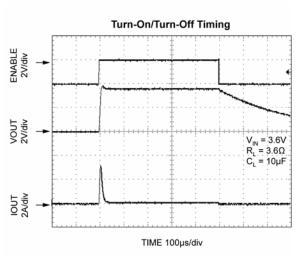


## MIC94067

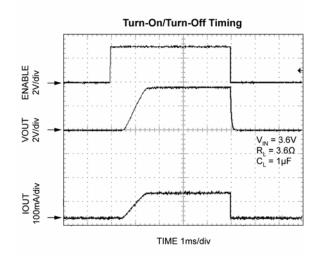


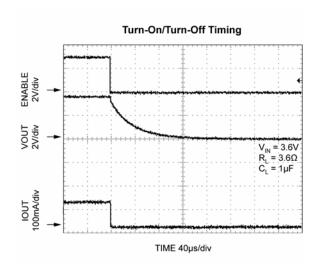


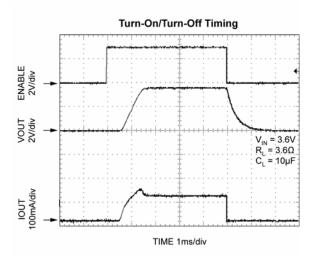


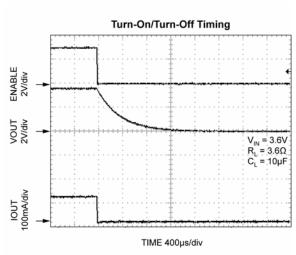


## MIC94068

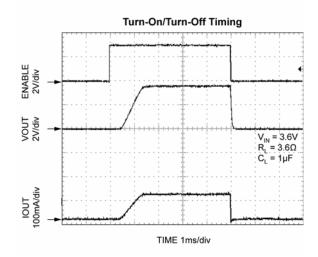


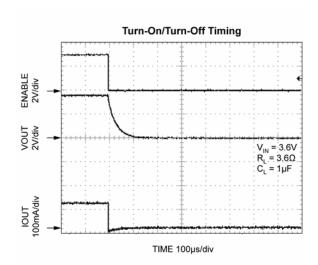


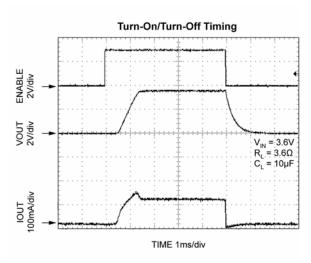


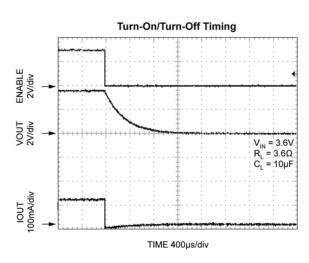


## MIC94069

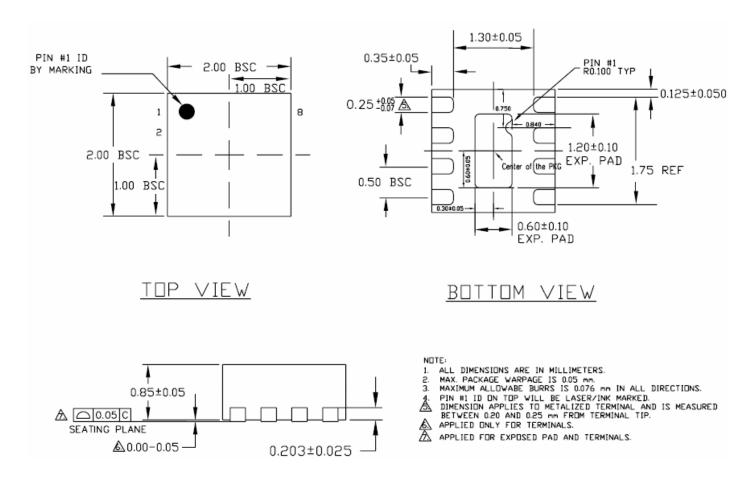








## **Package Information**



#### MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA

TEL +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB http://www.micrel.com

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