

Inrush Limiting

$$C_g = \frac{C_L}{I_{inrush}} \times 10\mu A$$

$$\text{slope} = \frac{10\mu A}{C_g} \quad 500 \frac{V}{s}$$

$$A = C/s$$

$$C = A \cdot s$$

$$F = \frac{A \cdot s}{V}$$

Figure 3

$$\frac{\Delta V}{\Delta t} = \frac{36V}{90msec} = \frac{400 V/s}{2.5 ms/V} \quad 400mV/ms \quad (\text{Gate})$$

Si7120

V_{gth}

min
Nom
max

1.5V
2.5V
3.0V

t_{vgth}

3.75ms
6.25ms
7.50ms

$$\frac{C}{s} = \frac{V}{A \cdot s}$$

How long it takes to reach 47mV (or 50mV)?

$$500 V/s \leftrightarrow 0.002 s/V \quad \therefore 50mV \text{ takes } 100\mu sec$$

$$I_{inrush} = \frac{C_L}{C_g} \times 10\mu A = \frac{100\mu F}{20nF} (10\mu A) = 50mA$$

$$\frac{1000\mu F}{20nF} (10\mu A) = 0.5A$$

I_{inrush}	C_L	C_g	C_L	C_g
0.5A	1000μF	20nF	100μF	2nF
1A	↓	10nF	↓	1nF
2A		5nF		500pF
3A		3.33nF		333pF
4A		2.5nF		250pF
5A	↓	2nF	↓	200pF