

# Switchable Current Regulators

## IXCP10M90S IXCY10M90S

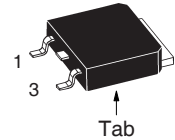
$$V_{AK} = 900V$$

$$I_{A(p)} = 1 - 100mA$$

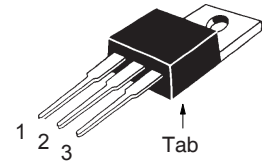
$$R_{AK(typ)} = 58k\Omega$$

Symbol	Test Conditions	Maximum Ratings	
$V_{AKR}$	$T_J = 25^\circ C$ to $150^\circ C$	900	V
$V_{AGR}$	$T_J = 25^\circ C$ to $150^\circ C$	900	V
$V_{GKR}$		$\pm 20$	V
$I_A$	$T_C = 25^\circ C$	0.3	A
$P_D$	$T_C = 25^\circ C$	40	W
$T_J$		- 55 ... +150	$^\circ C$
$T_{JM}$		150	$^\circ C$
$T_{stg}$		- 55 ... +150	$^\circ C$
$T_L$	1.6mm (0.062 in.) from Case for 10s	300	$^\circ C$
$T_{SOLD}$	Plastic Body for 10s	260	$^\circ C$
$M_d$	Mounting Torque (TO-220)	1.13 / 10	Nm/lb.in.
Weight	TO-252	0.35	g
	TO-220	3.00	g

### TO-252 (IXCY)



### TO-220AB (IXCP)



### Pin connections

1 = G, Control Terminal,  
2 and Tab = A (+), Positive Terminal  
3 = K (-), Negative Terminal

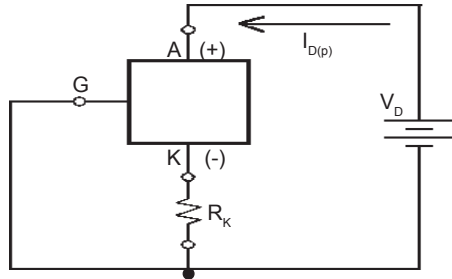
### Features

- 40W Continuous Dissipation
- International Standard Packages JEDEC TO-220 and TO-252
- On/Off Switchable Current Source

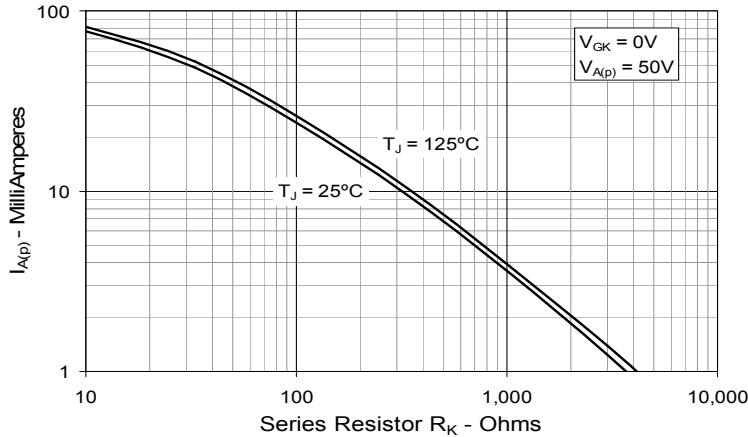
### Applications

- Start-Up Circuits for SMPS
- Highly Stable Voltage Sources
- Surge Limiters and Voltage Protection
- Fast Reacting Resettable Fuses
- Soft Start-Up Circuits

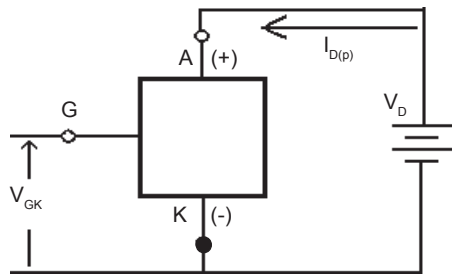
Symbol	Test Conditions ( $T_J = 25^\circ C$ , Unless Otherwise Specified)	Characteristic Values		
		Min.	Typ.	Max.
$V_{AKR}$	$R_K = 300\Omega$ , (Fig. 1)	900		V
$I_{A(p)}$	$V_D = 10V$ , $R_K = 300\Omega$ , (Fig. 1)	7	9	15 mA
$V_{GK(off)}$	$I_{A(p)} = 100\mu A$ , $V_D = 900V$ , (Fig. 3)	- 5		V
$I_{A(p)}$	$V_D = 720V$ , $V_{GK} = -10V$			25 $\mu A$
$\Delta V_{AK} / \Delta I_{A(p)}$	Dynamic Resistance, $V_D = 100V$ $V_{GK} = 0V$	30		k $\Omega$
$R_{thJC}$	Thermal Resistance Junction-to-Case			3.1 K/W
$R_{thJA}$	Thermal Resistance Junction-to-Ambient TO-220			80 K/W
	TO-252			100 K/W



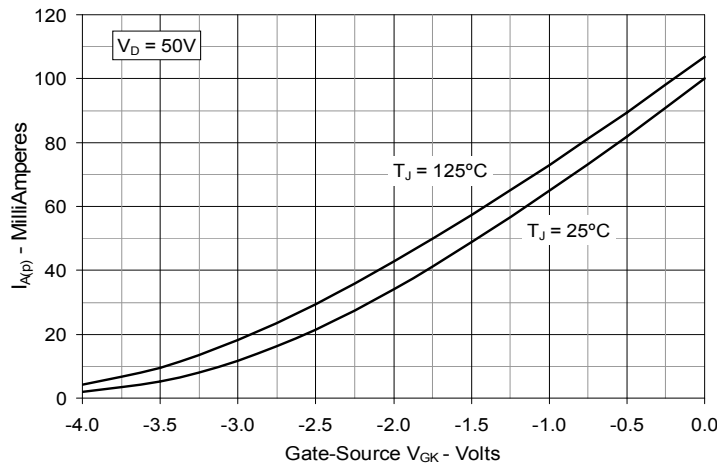
**Fig. 1 Resistor  $R_K$  in Series with Negative Pin to Achieve Different Current Levels**



**Fig. 2. Plateau Current vs. External Resistance**

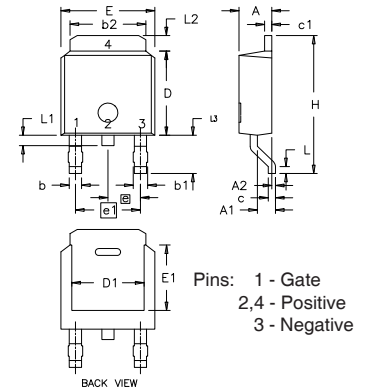


**Fig. 3. Current Regulator Controlled by  $V_{GK}$**



**Fig. 4. Plateau Current vs. Applied Input Voltage**

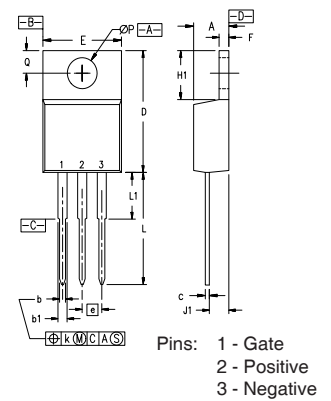
### TO-252 AA (IXCY)



Pins: 1 - Gate  
2,4 - Positive  
3 - Negative

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.19	2.38	0.086	0.094
A1	0.89	1.14	0.035	0.045
A2	0	0.13	0	0.005
b	0.64	0.89	0.025	0.035
b1	0.76	1.14	0.030	0.045
b2	5.21	5.46	0.205	0.215
c	0.46	0.58	0.018	0.023
c1	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.32	5.21	0.170	0.205
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	2.28 BSC		0.090 BSC	
e1	4.57 BSC		0.180 BSC	
H	9.40	10.42	0.370	0.410
L	0.51	1.02	0.020	0.040
L1	0.64	1.02	0.025	0.040
L2	0.89	1.27	0.035	0.050
L3	2.54	2.92	0.100	0.115

### TO-220 (IXCP) Outline



Pins: 1 - Gate  
2 - Positive  
3 - Negative

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
b	.025	.040	0.64	1.02
b1	.045	.065	1.15	1.65
c	.014	.022	0.35	0.56
D	.580	.630	14.73	16.00
E	.390	.420	9.91	10.66
e	.100 BSC		2.54 BSC	
F	.045	.055	1.14	1.40
H1	.230	.270	5.85	6.85
J1	.090	.110	2.29	2.79
k	0	.015	0	0.38
L	.500	.550	12.70	13.97
L1	.110	.230	2.79	5.84
ØP	.139	.161	3.53	4.08
Q	.100	.125	2.54	3.18

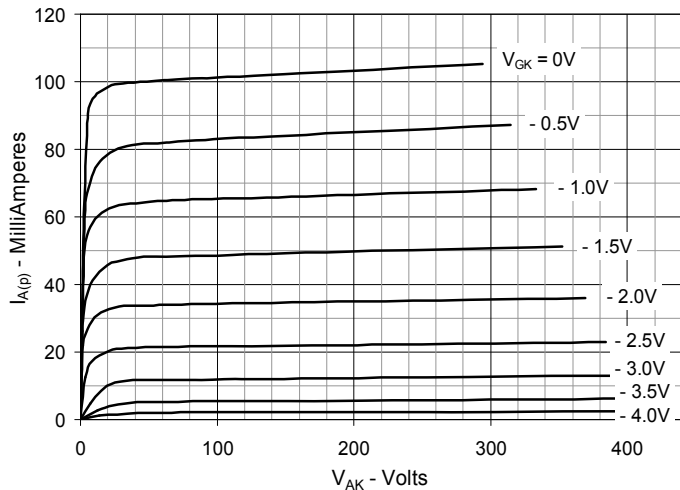


Fig. 5. Extended Output Curves @  $T_J = 25^\circ\text{C}$

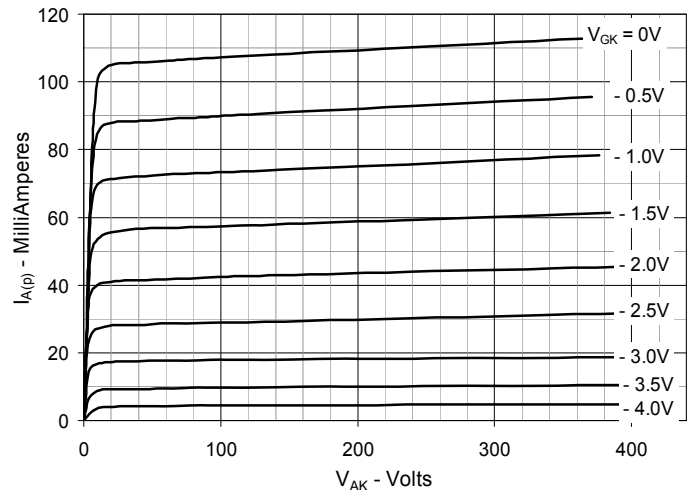


Fig. 6. Extended Output Curves @  $T_J = 125^\circ\text{C}$

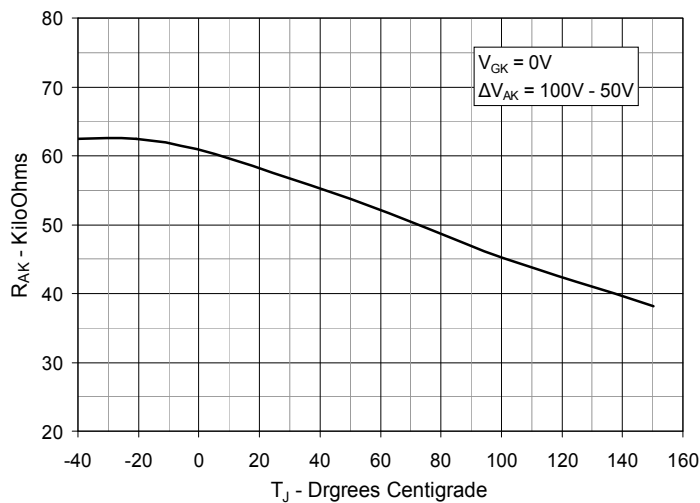


Fig. 7. Dynamic Resistance vs. Junction Temperature

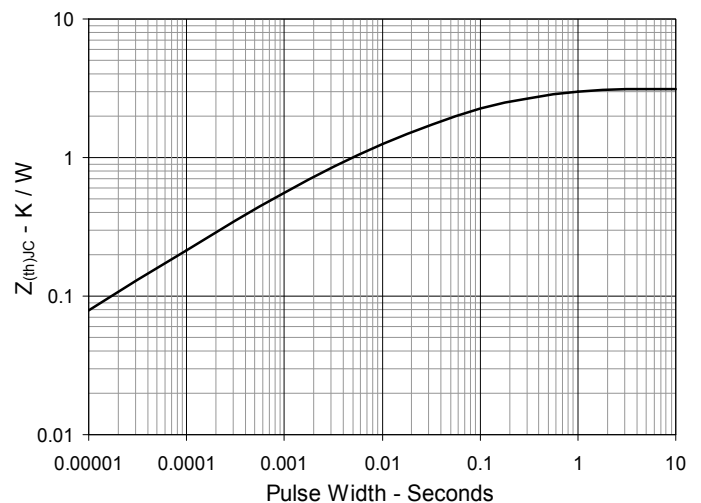


Fig. 8. Maximum Transient Thermal Resistance

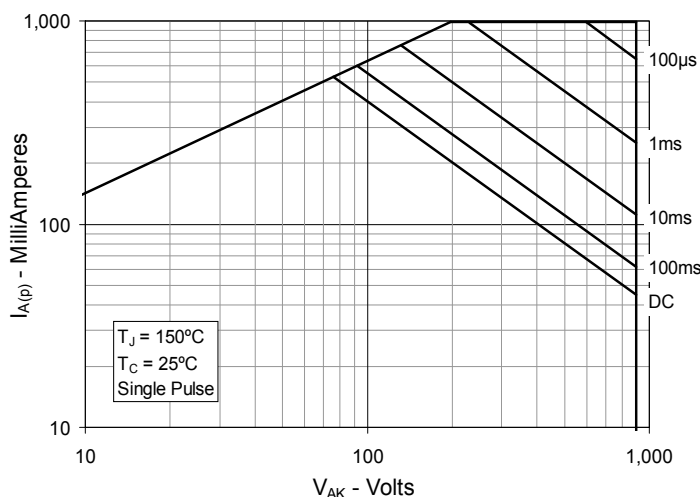


Fig. 9. Forward-Bias Safe Operating Area @  $T_C = 25^\circ\text{C}$

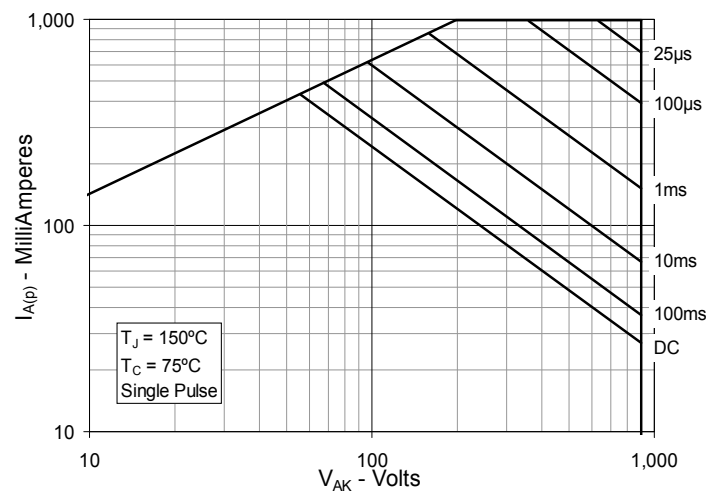


Fig. 10. Forward-Bias Safe Operating Area @  $T_C = 75^\circ\text{C}$