

MOSFET LARGE SIGNAL CHARACTERISTICS

	N CHANNEL	P CHANNEL
CIRCUIT SYMBOL		
ACTIVE	$I_D = \frac{\mu_n C_{ox}}{2} \frac{W}{L} \underbrace{(V_{GS} - V_{tn})^2}_{V_{eff}^2} [1 + \lambda_n (V_{DS} - V_{eff})]$	$I_D = \frac{\mu_p C_{ox}}{2} \frac{W}{L} \underbrace{(V_{SG} + V_{tp})^2}_{V_{eff}^2} [1 + \lambda_p (V_{SD} - V_{eff})]$
I_D - V_{DS} CHARACTERISTIC		
I_D - V_{GS} CHARACTERISTIC (ACTIVE REGION)		
TRIODE REGION	$I_D = \mu_n C_{ox} \frac{W}{L} \left[(V_{GS} - V_{tn})V_{DS} - \frac{V_{DS}^2}{2} \right]$	$I_D = \mu_p C_{ox} \frac{W}{L} \left[(V_{SG} + V_{tp})V_{SD} - \frac{V_{SD}^2}{2} \right]$