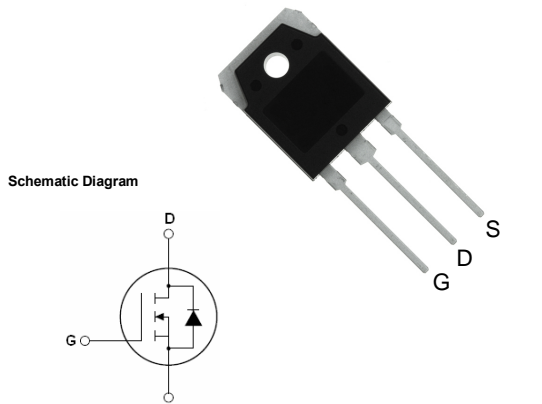
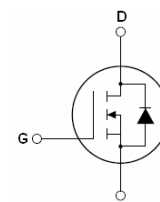


Pb Free Plating Product

K4107



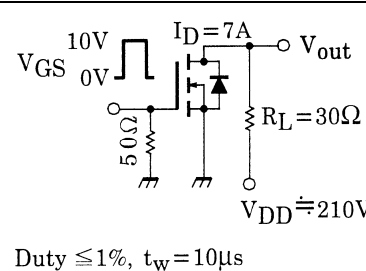
THINKISEMI 15A,500V N-CHANNEL PLANAR STRIPE POWER MOSFETs

<p><b>Features</b></p> <ul style="list-style-type: none"> <li>※ Low ON Resistance</li> <li>※ Low Gate Charge</li> <li>※ Peak Current vs Pulse Width Curve</li> <li>※ ESD Capability Improved</li> <li>※ 100% Avalanche Tested</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>※ Uninterruptible Power Supply(UPS)</li> <li>※ LCD Panel Power</li> <li>※ DC-AC Inverter, Amplifier and SMPS</li> </ul> <p><b>Mechanical Data</b></p> <ul style="list-style-type: none"> <li>※ Case: TO-3P non-isolated package</li> <li>※ Epoxy: UL 94V-0 rate flame retardant</li> <li>※ Terminals: Solderable per MIL-STD-202 method 208</li> <li>※ Polarity: As per configuration</li> <li>※ Mounting position: Any</li> <li>※ Weight: 6.0 gram approximately</li> </ul>	<p>TO-3P pkg outline &amp; internal configuration</p>  <p>Schematic Diagram</p> 
--	--

### Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit	
Drain-source voltage	$V_{DSS}$	500	V	
Drain-gate voltage ( $R_{GS} = 20 \text{ k}\Omega$ )	$V_{DGR}$	500	V	
Gate-source voltage	$V_{GSS}$	$\pm 30$	V	
Drain current	DC (Note 1)	$I_D$	15	A
	Pulse (Note 1)	$I_{DP}$	60	A
Drain power dissipation ( $T_c = 25^\circ\text{C}$ )	$P_D$	150	W	
Single-pulse avalanche energy (Note 2)	$E_{AS}$	765	mJ	
Avalanche current	$I_{AR}$	15	A	
Repetitive avalanche energy (Note 3)	$E_{AR}$	15	mJ	
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$	
Storage temperature range	$T_{stg}$	-55~150	$^\circ\text{C}$	

**Electrical Characteristics (Ta = 25°C)**

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		$I_{GSS}$	$V_{GS} = \pm 25\text{ V}, V_{DS} = 0\text{ V}$	—	—	$\pm 10$	$\mu\text{A}$
Gate-source breakdown voltage		$V_{(BR)GSS}$	$I_G = \pm 10\ \mu\text{A}, V_{DS} = 0\text{ V}$	$\pm 30$	—	—	V
Drain cutoff current		$I_{DSS}$	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$	—	—	100	$\mu\text{A}$
Drain-source breakdown voltage		$V_{(BR)DSS}$	$I_D = 10\text{ mA}, V_{GS} = 0\text{ V}$	500	—	—	V
Gate threshold voltage		$V_{th}$	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	2.0	—	4.0	V
Drain-source ON resistance		$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 7.0\text{ A}$	—	0.33	0.4	$\Omega$
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 7.0\text{ A}$	4.0	8.5	—	S
Input capacitance		$C_{iss}$	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	2450	—	pF
Reverse transfer capacitance		$C_{rss}$		—	15	—	
Output capacitance		$C_{oss}$		—	220	—	
Switching time	Rise time	$t_r$		—	50	—	ns
	Turn-on time	$t_{on}$		—	90	—	
	Fall time	$t_f$		—	45	—	
	Turn-off time	$t_{off}$		—	175	—	
Total gate charge (gate-source plus gate-drain)		$Q_g$	$V_{DD} \approx 400\text{ V}, V_{GS} = 10\text{ V}, I_D = 15\text{ A}$	—	48	—	nC
Gate-source charge		$Q_{gs}$		—	26	—	
Gate-drain ("Miller") charge		$Q_{gd}$		—	22	—	

**Source-Drain Ratings and Characteristics (Ta = 25°C)**

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	$I_{DR}$	—	—	—	15	A
Pulse drain reverse current (Note 1)	$I_{DRP}$	—	—	—	60	A
Forward voltage (diode)	$V_{DSF}$	$I_{DR} = 15\text{ A}, V_{GS} = 0\text{ V}$	—	—	-1.7	V
Reverse recovery time	$t_{rr}$	$I_{DR} = 15\text{ A}, V_{GS} = 0\text{ V}$ $dI_{DR} / dt = 100\text{ A} / \mu\text{s}$	—	1050	—	ns
Reverse recovery charge	$Q_{rr}$		—	13	—	$\mu\text{C}$

**Thermal Characteristics**

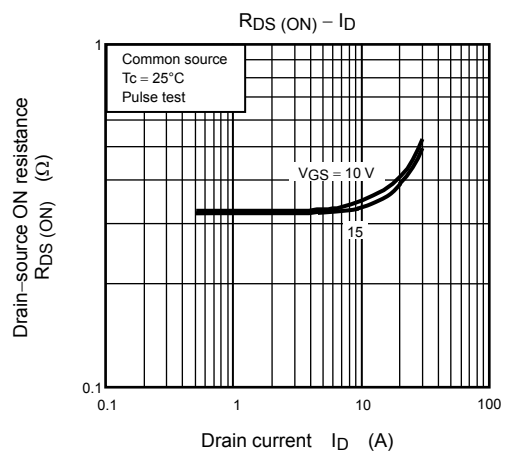
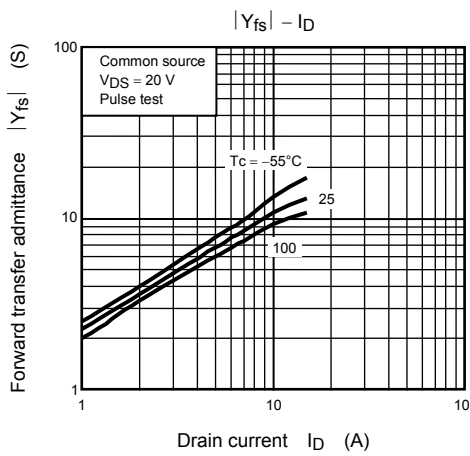
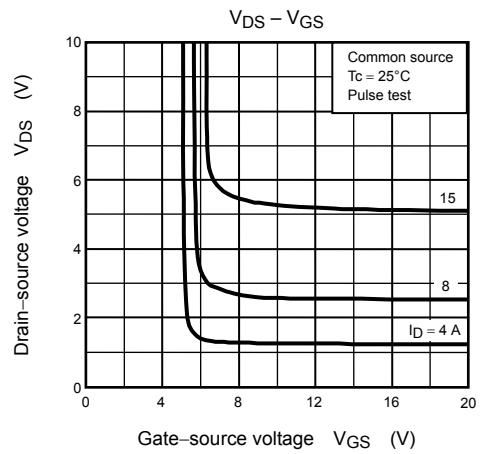
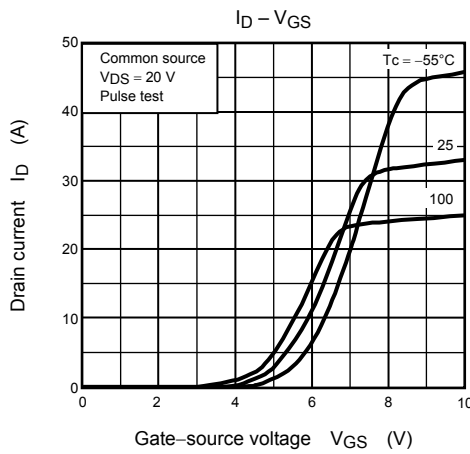
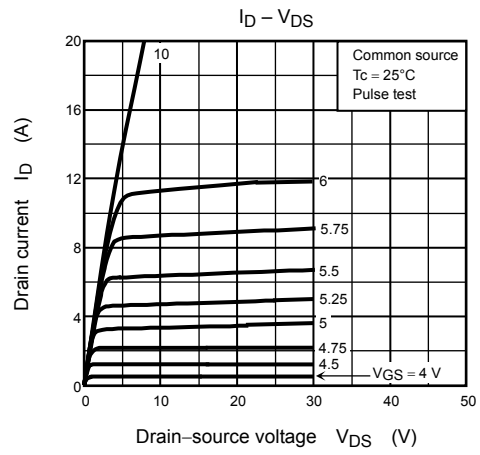
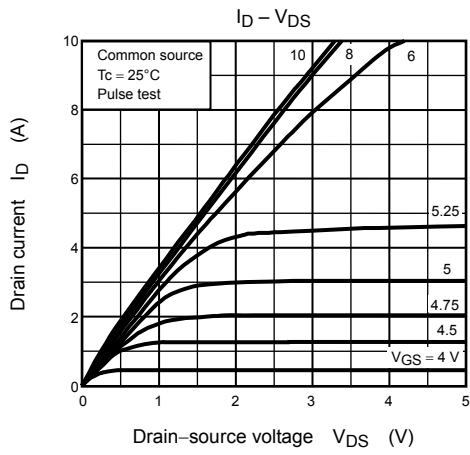
Characteristic	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th(ch-c)}$	0.833	$^{\circ}\text{C}/\text{W}$
Thermal resistance, channel to ambient	$R_{th(ch-a)}$	50	$^{\circ}\text{C}/\text{W}$

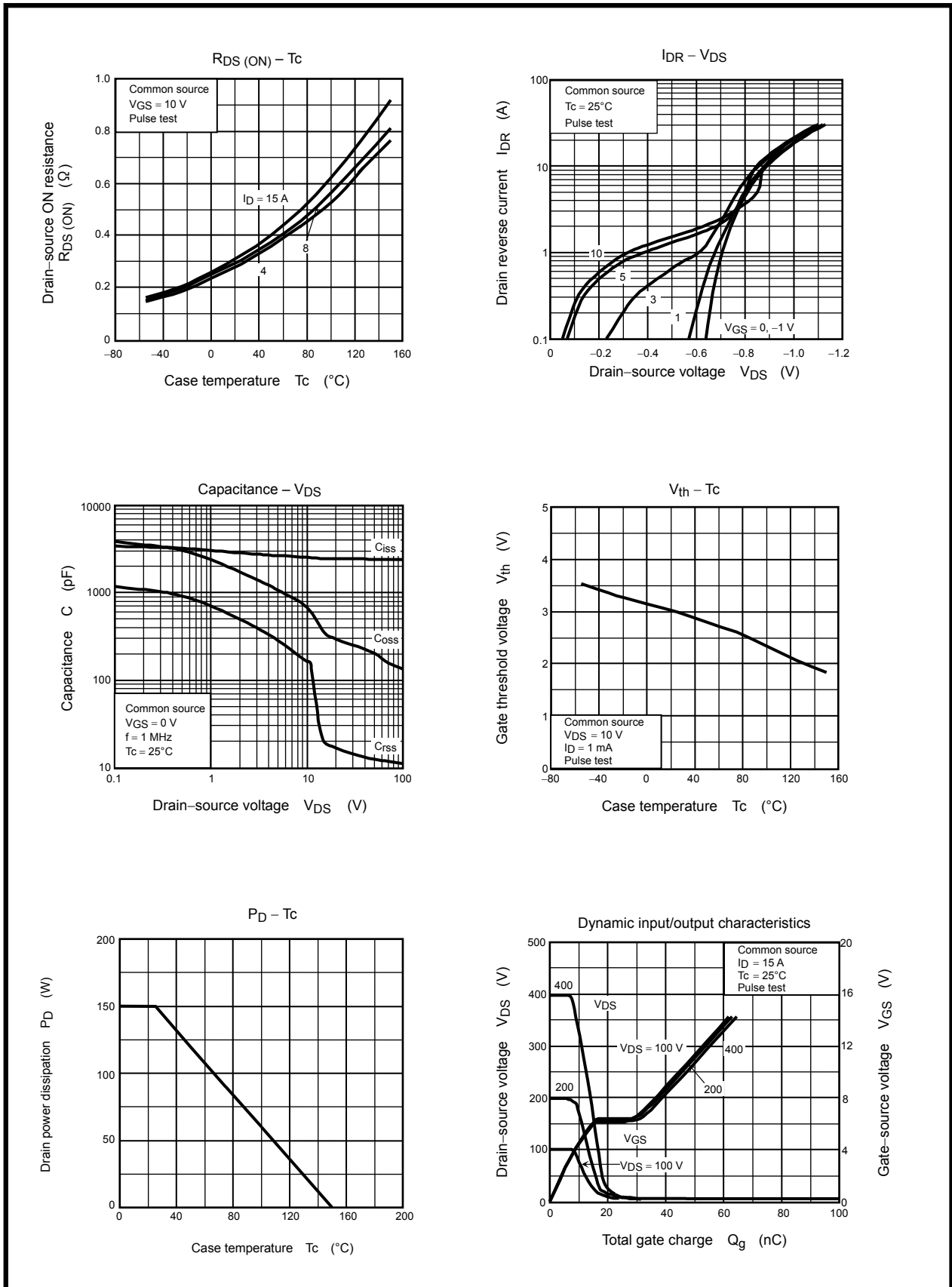
Note 1: Ensure that the channel temperature does not exceed 150°C.

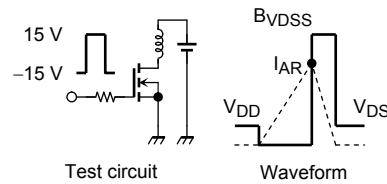
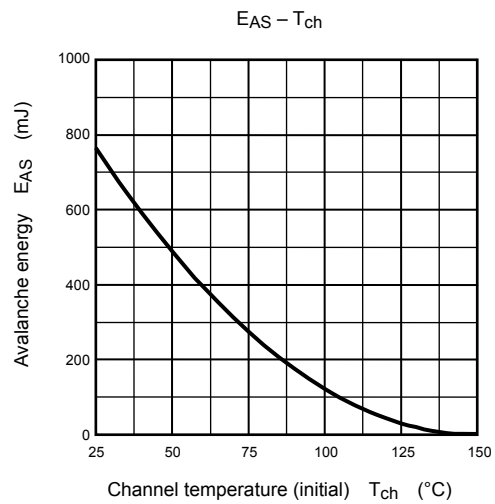
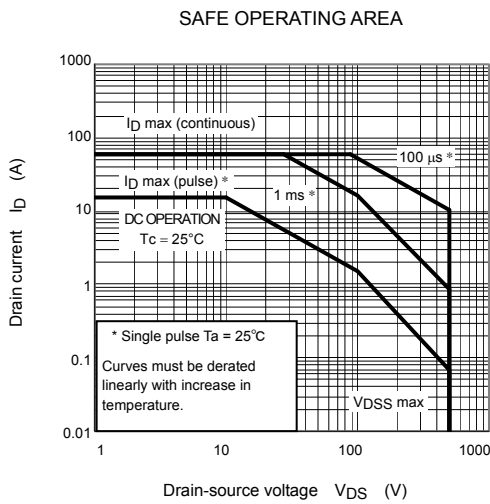
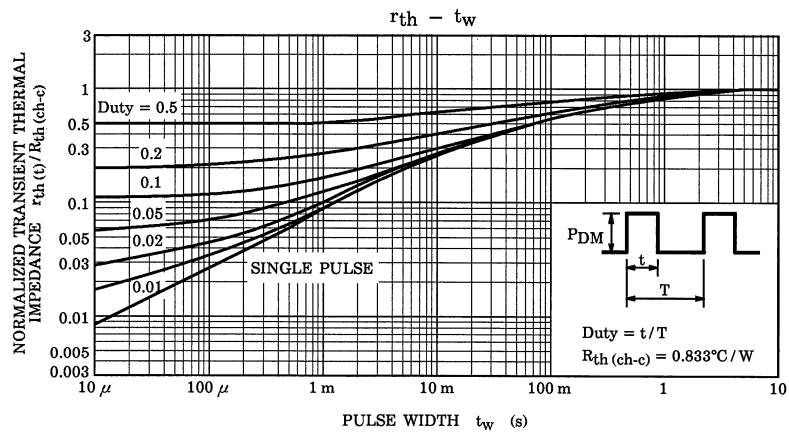
Note 2:  $V_{DD} = 90\text{ V}, T_{ch} = 25^{\circ}\text{C}$  (initial),  $L = 5.78\text{ mH}, R_G = 25\ \Omega, I_{AR} = 15\text{ A}$

Note 3: Repetitive rating: pulse width limited by maximum channel temperature

This transistor is an electrostatic-sensitive device. Handle with care.





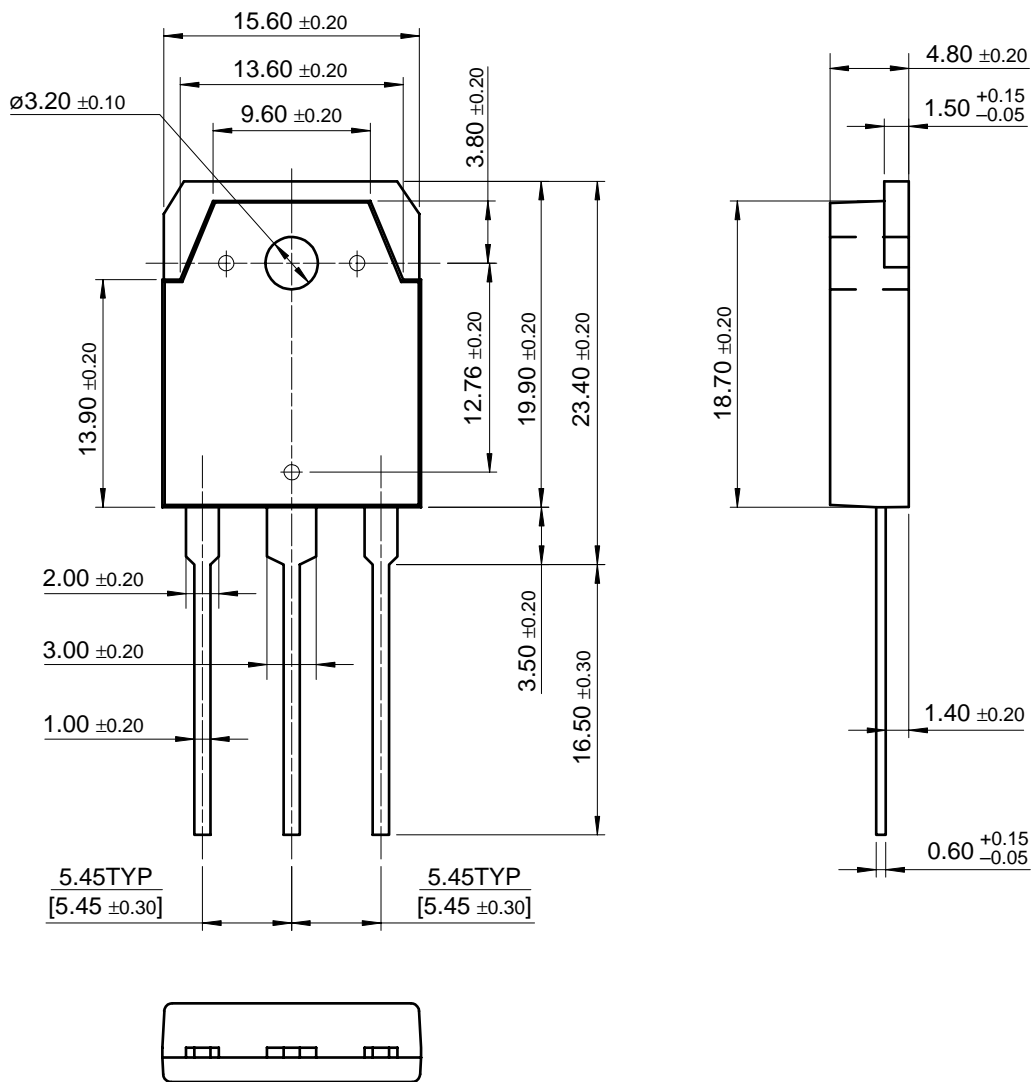


$R_G = 25 \Omega$   
 $V_{DD} = 90 \text{ V}, L = 5.78 \text{ mH}$

$$E_{AS} = \frac{1}{2} \cdot L \cdot I_{AR}^2 \cdot \left( \frac{B_{VDSS}}{B_{VDSS} - V_{DD}} \right)$$

THINKI TO-3P Package Dimensions

TO-3PN-SQ/TO-3PB-SQ



Dimensions in Millimeters