

Pb Free Plating Product

TK15J50D



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

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

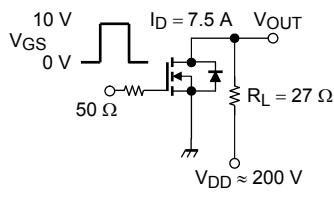
Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	500	V
Gate-source voltage		V_{GSS}	±30	V
Drain current	DC (Note 1)	I_D	15	A
	Pulse (Note 1)	I_{DP}	60	
Drain power dissipation (Tc = 25°C)		P_D	210	W
Single pulse avalanche energy (Note 2)		E_{AS}	360	mJ
Avalanche current		I_{AR}	15	A
Repetitive avalanche energy (Note 3)		E_{AR}	21	mJ
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	-55 to 150	°C

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th(ch-c)}$	0.595	°C/W
Thermal resistance, channel to ambient	$R_{th(ch-a)}$	50	°C/W

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = \pm 30\text{ V}, V_{DS} = 0\text{ V}$	—	—	± 1	μA
Drain cut-off current		I_{DSS}	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$	—	—	10	μA
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		$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 7.5\text{ A}$	—	0.33	0.4	Ω
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 10\text{ V}, I_D = 7.5\text{ A}$	2.0	8.0	—	S
Input capacitance		C_{iss}	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	—	1800	—	pF
Reverse transfer capacitance		C_{rss}		—	9	—	
Output capacitance		C_{oss}		—	190	—	
Switching time	Rise time	t_r		—	40	—	ns
	Turn-on time	t_{on}		—	80	—	
	Fall time	t_f		—	15	—	
	Turn-off time	t_{off}		—	110	—	
Total gate charge		Q_g	$V_{DD} \approx 400\text{ V}, V_{GS} = 10\text{ V}, I_D = 15\text{ A}$	—	38	—	nC
Gate-source charge		Q_{gs}		—	24	—	
Gate-drain charge		Q_{gd}		—	14	—	

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

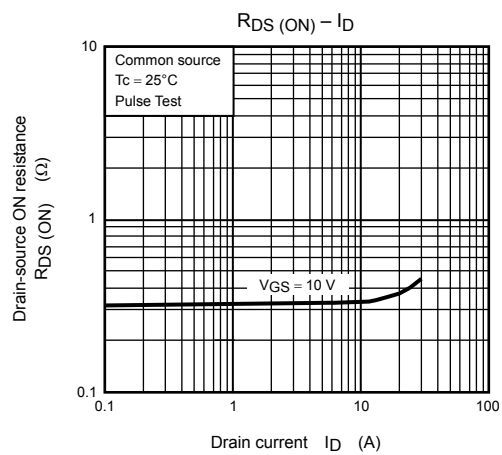
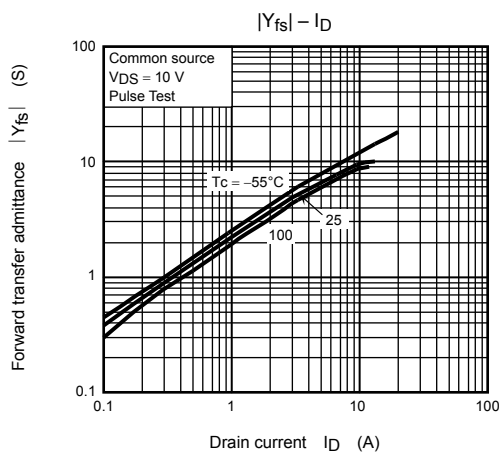
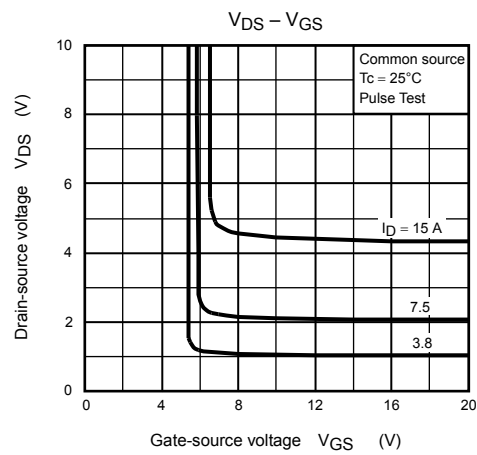
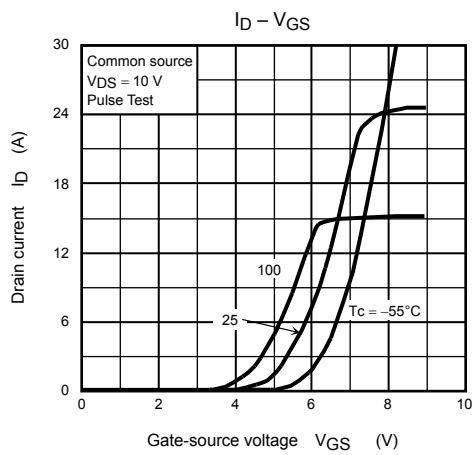
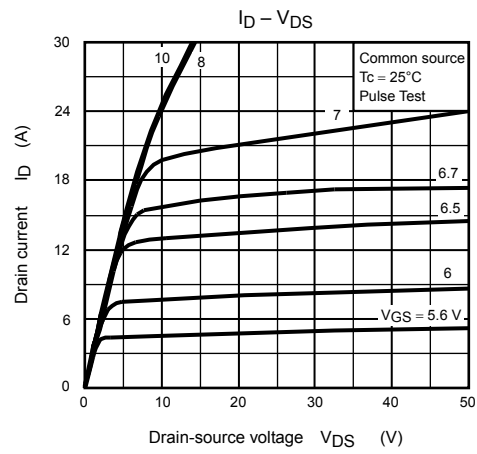
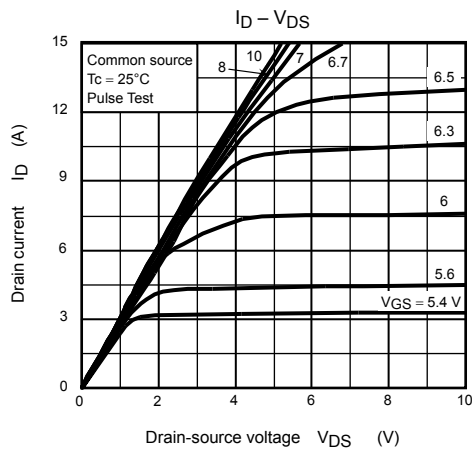
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	15	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	60	A
Forward voltage (diode)	V_{DSF}	$I_{DR} = 15\text{ A}, V_{GS} = 0\text{ V}$	—	—	-1.7	V
Reverse recovery time	t_{rr}	$I_{DR} = 15\text{ A}, V_{GS} = 0\text{ V},$	—	1200	—	ns
Reverse recovery charge	Q_{rr}	$dI_{DR}/dt = 100\text{ A}/\mu\text{s}$	—	13	—	μC

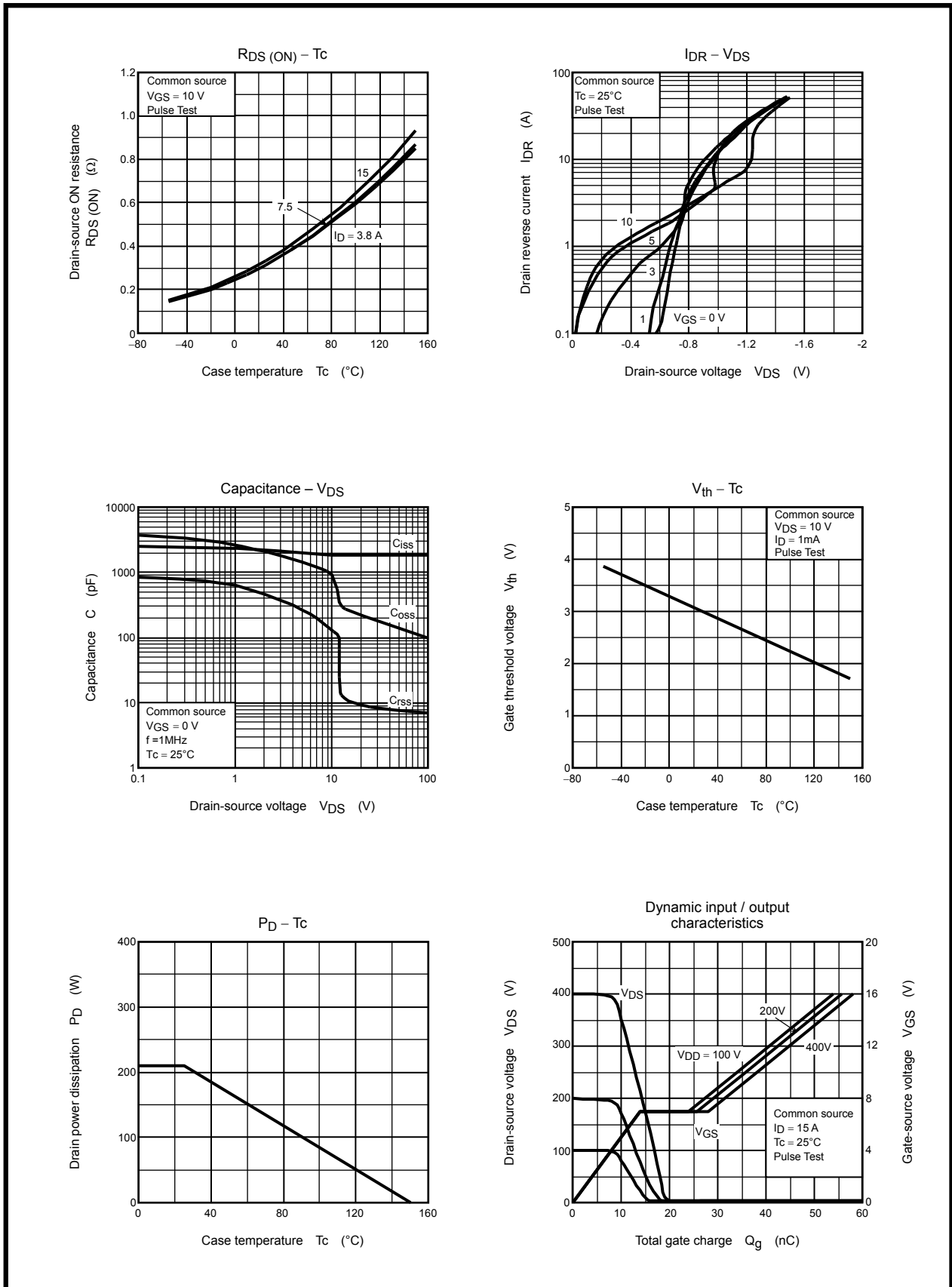
Note 1: Please use devices on conditions that the channel temperature is below 150°C.

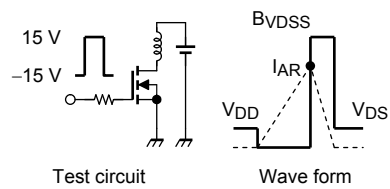
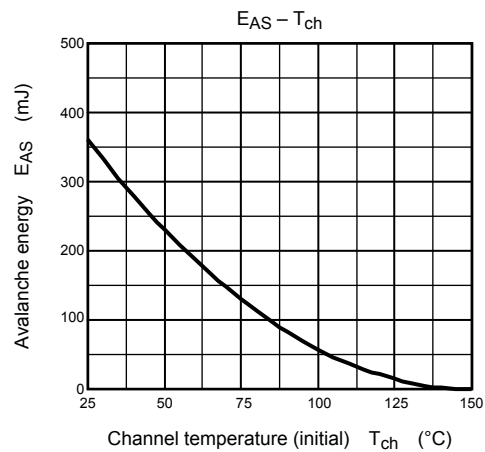
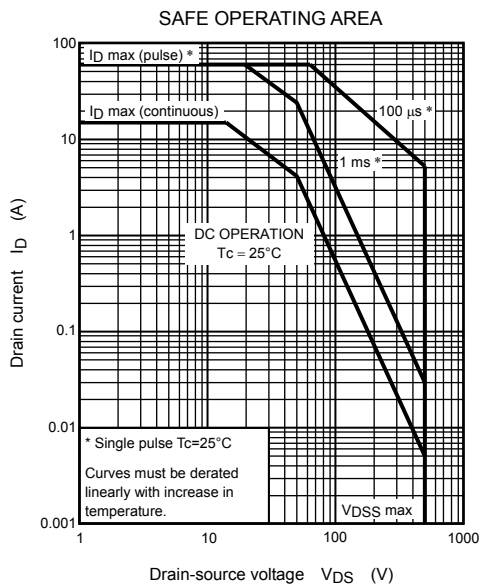
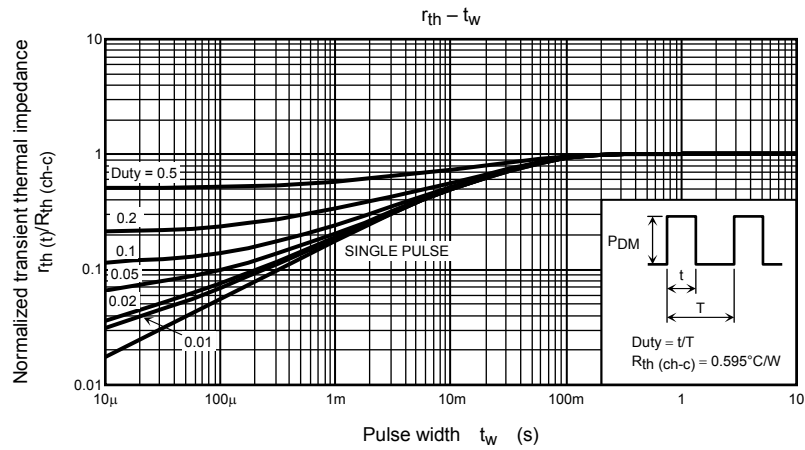
Note 2: $V_{DD} = 90\text{ V}, T_{ch} = 25^\circ\text{C}$ (initial), $L = 2.72\text{ mH}, R_G = 25\ \Omega, I_{AR} = 15\text{ A}$

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

This transistor is an electrostatic sensitive device. Please handle with caution.





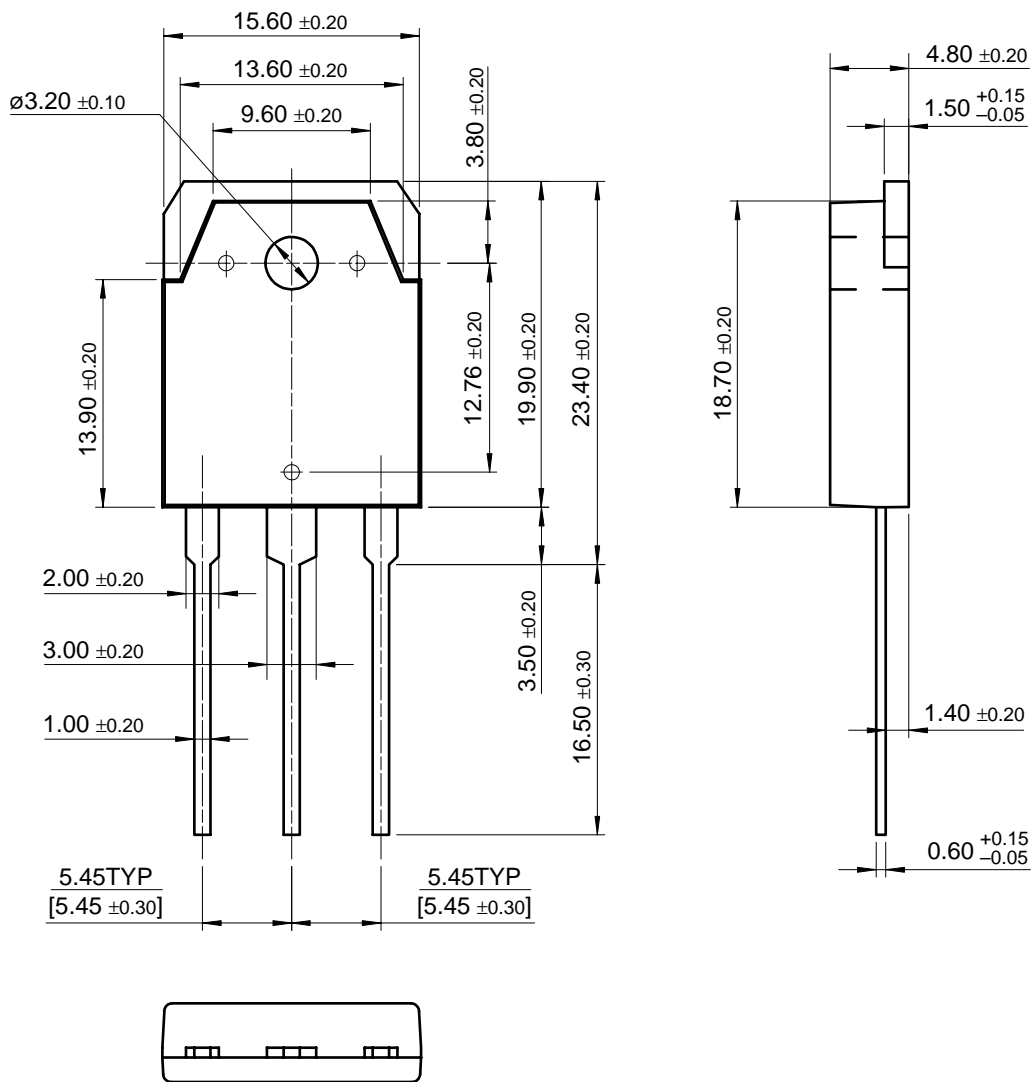


$R_G = 25\ \Omega$
 $V_{DD} = 90\ V, L = 2.72\ mH$

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

THINKI TO-3P Package Dimensions

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



Dimensions in Millimeters