
2SK2725

Silicon N Channel MOS FET
High Speed Power Switching

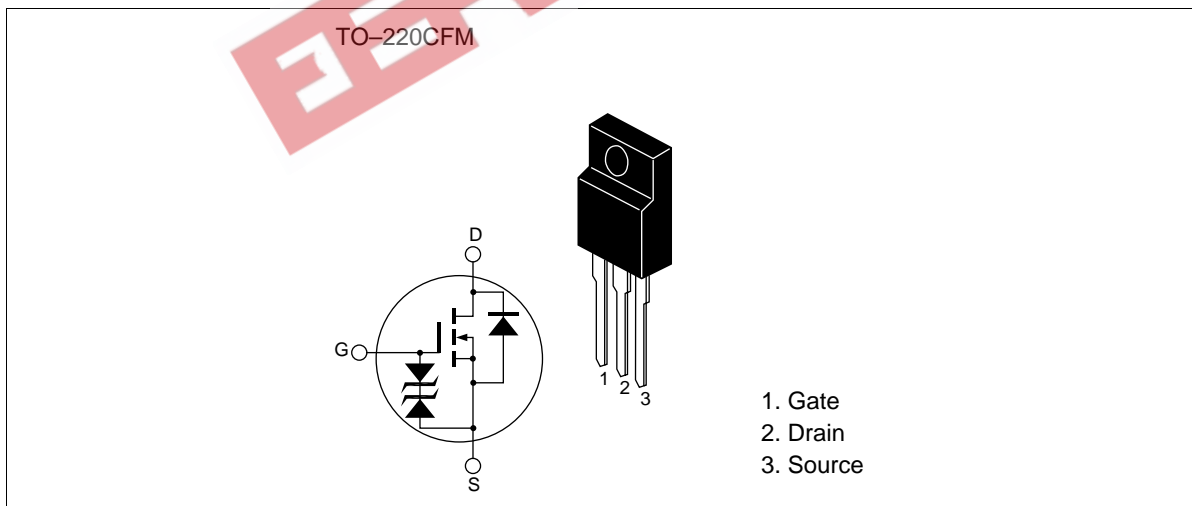
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ADE-208-452 B
3rd. Edition

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Avalanche ratings

Outline



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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	500	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	5	A
Drain peak current	$I_{D(pulse)}^{*1}$	20	A
Body to drain diode reverse drain current	I_{DR}	5	A
Avalanche current	I_{AP}^{*3}	5	A
Avalanche energy	E_{AR}^{*3}	1.38	mJ
Channel dissipation	Pch^{*2}	30	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

- Notes: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ C$
3. Value at $Tch = 25^\circ C$, $R_g \geq 50\Omega$

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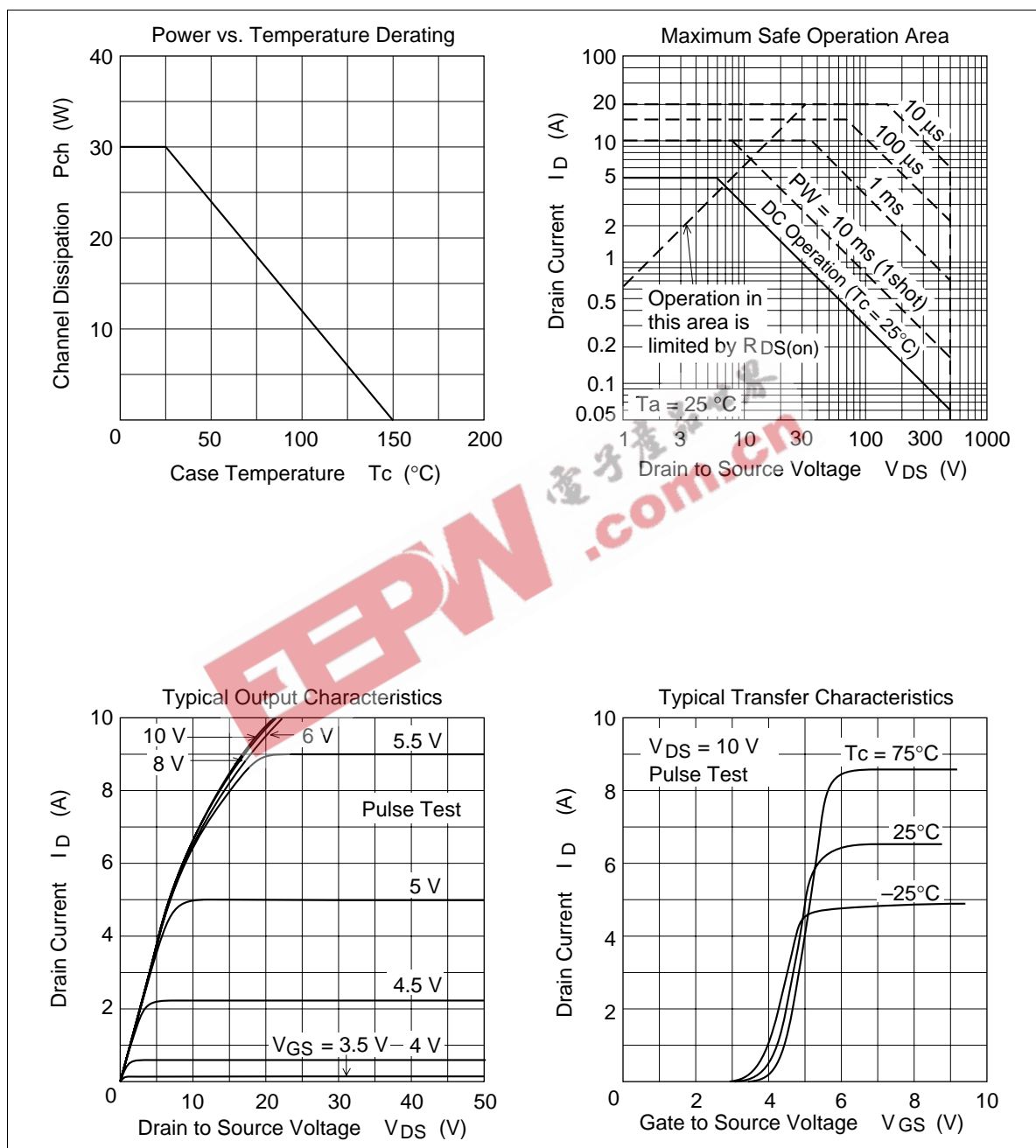
Electrical Characteristics (T_a = 25°C)

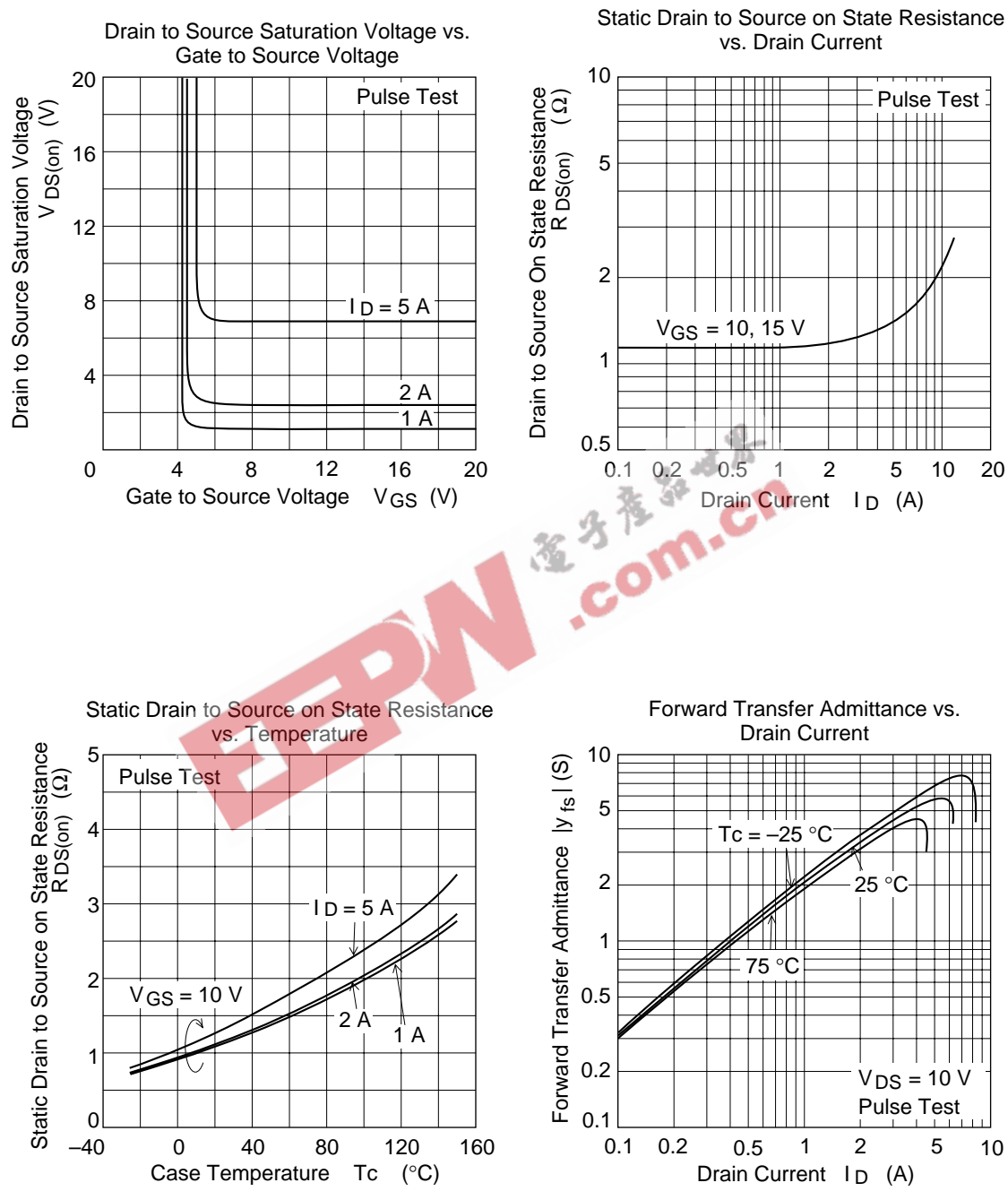
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$I_D = 10\text{mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100\mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 25\text{V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 500\text{V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.5	—	3.5	V	$I_D = 1\text{mA}, V_{DS} = 10\text{V}^{*1}$
Static drain to source on state resistance	$R_{DS(on)}$	—	1.2	1.6	Ω	$I_D = 3\text{A}, V_{GS} = 10\text{V}^{*1}$
Forward transfer admittance	$ y_{fs} $	2.5	4.5	—	S	$I_D = 3\text{A}, V_{DS} = 10\text{V}^{*1}$
Input capacitance	C_{iss}	—	630	—	pF	$V_{DS} = 10\text{V}$
Output capacitance	C_{oss}	—	250	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	55	—	pF	$f = 1\text{MHz}$
Total gate charge	Q_g	—	13.5	—	nc	$V_{DD} = 400\text{V}$
Gate to source charge	Q_{gs}	—	3.5	—	nc	$V_{GS} = 10\text{V}$
Gate to drain charge	Q_{gd}	—	5.0	—	nc	$I_D = 5\text{A}$
Turn-on delay time	$t_{d(on)}$	—	11	—	ns	$V_{GS} = 10\text{V}, I_D = 3\text{A}$
Rise time	t_r	—	45	—	ns	$R_L = 10\Omega$
Turn-off delay time	$t_{d(off)}$	—	40	—	ns	
Fall time	t_f	—	50	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.95	—	V	$I_D = 5\text{A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	200	—	ns	$I_F = 5\text{A}, V_{GS} = 0$ $diF/dt = 100\text{A}/\mu\text{s}$

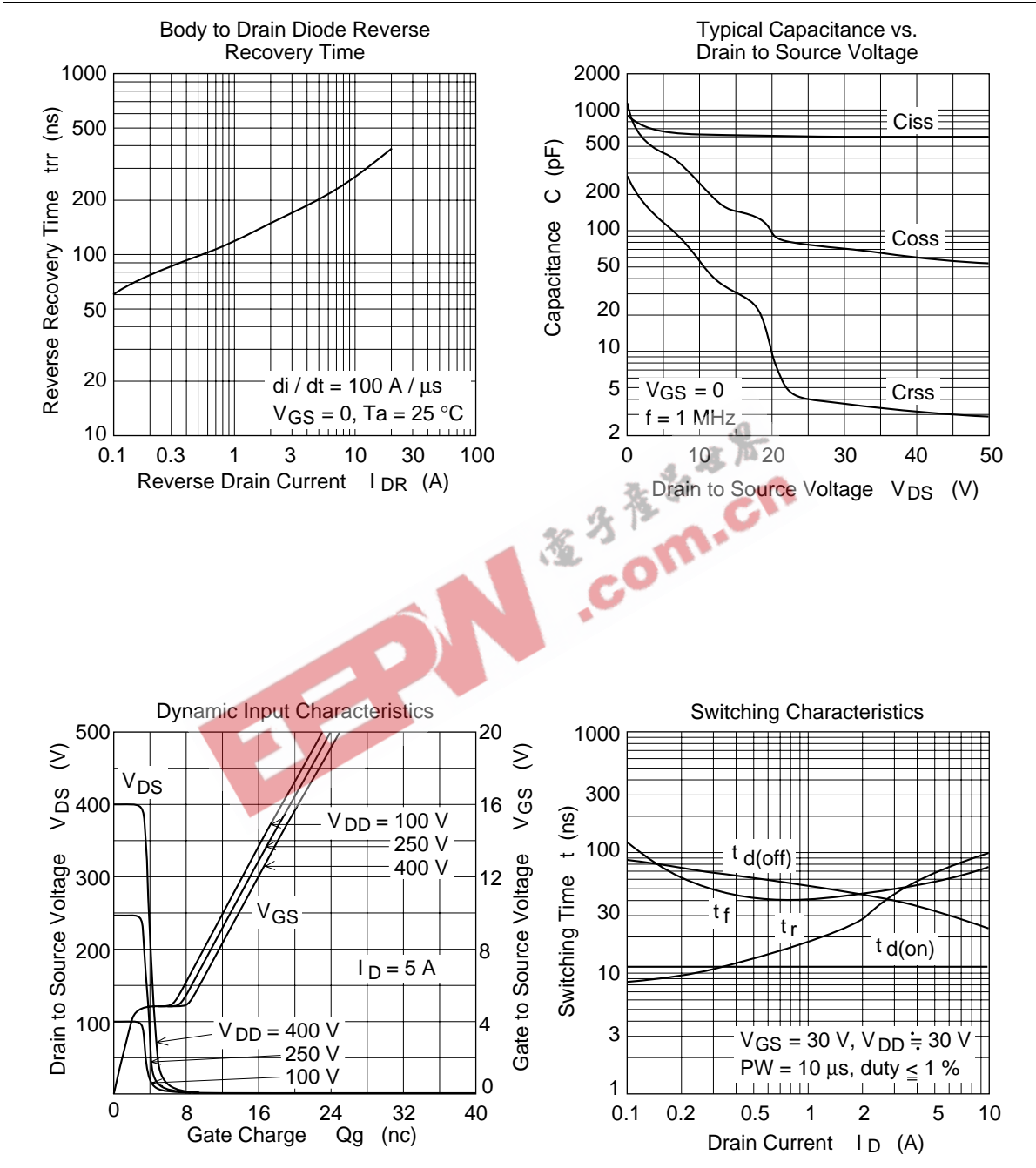
Note: 1. Pulse test

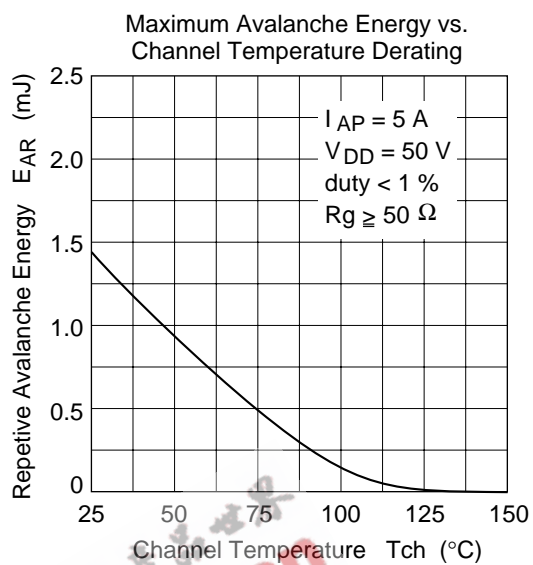
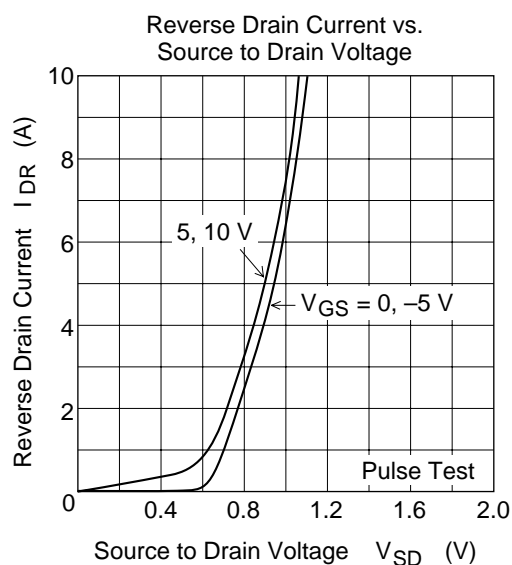
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Main Characteristics

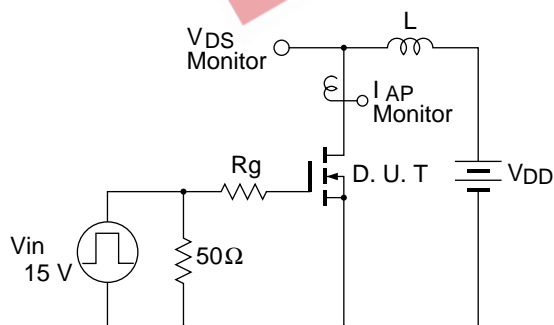






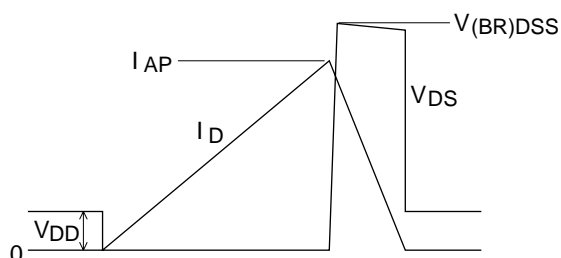


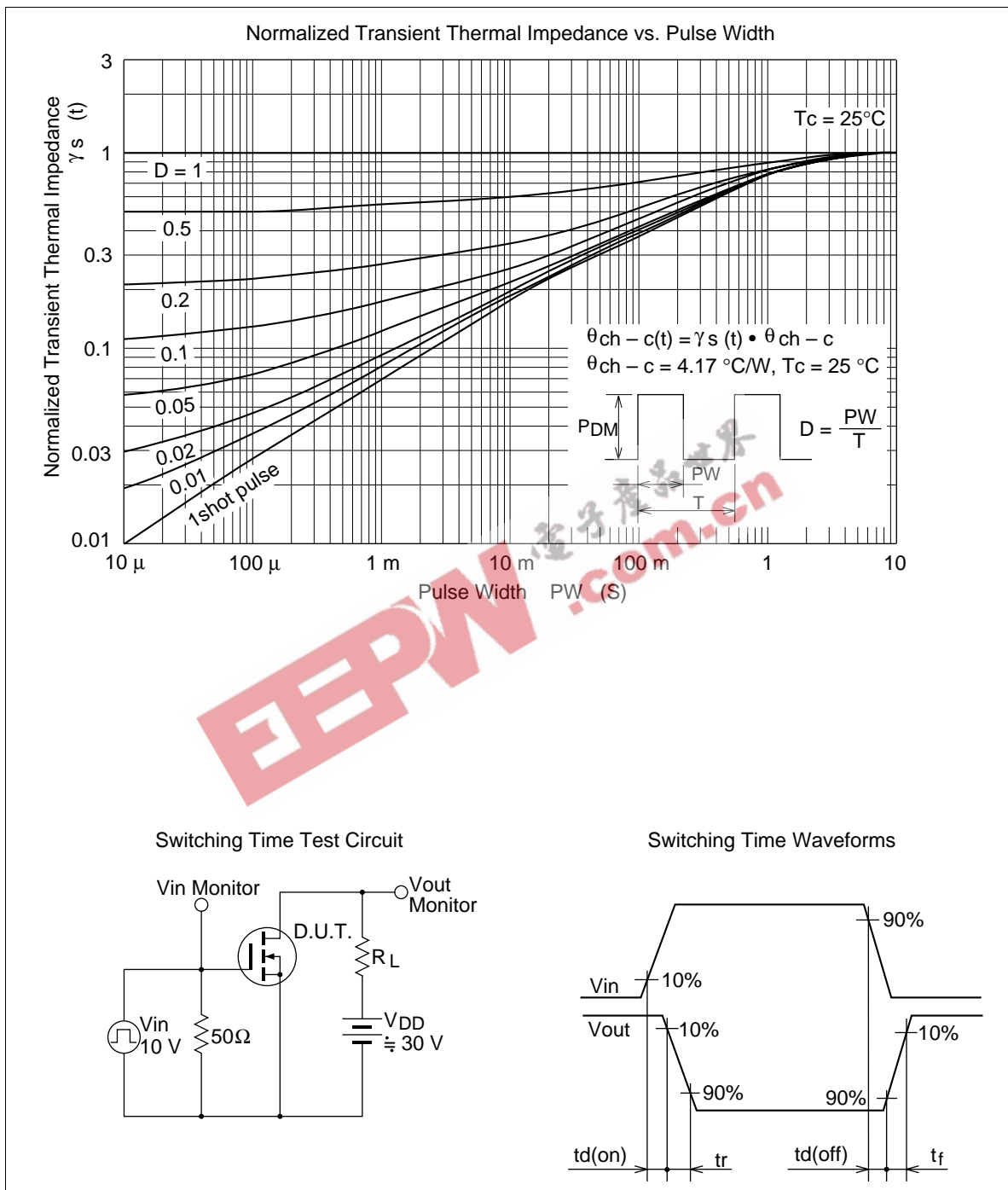
Avalanche Test Circuit



Avalanche Waveform

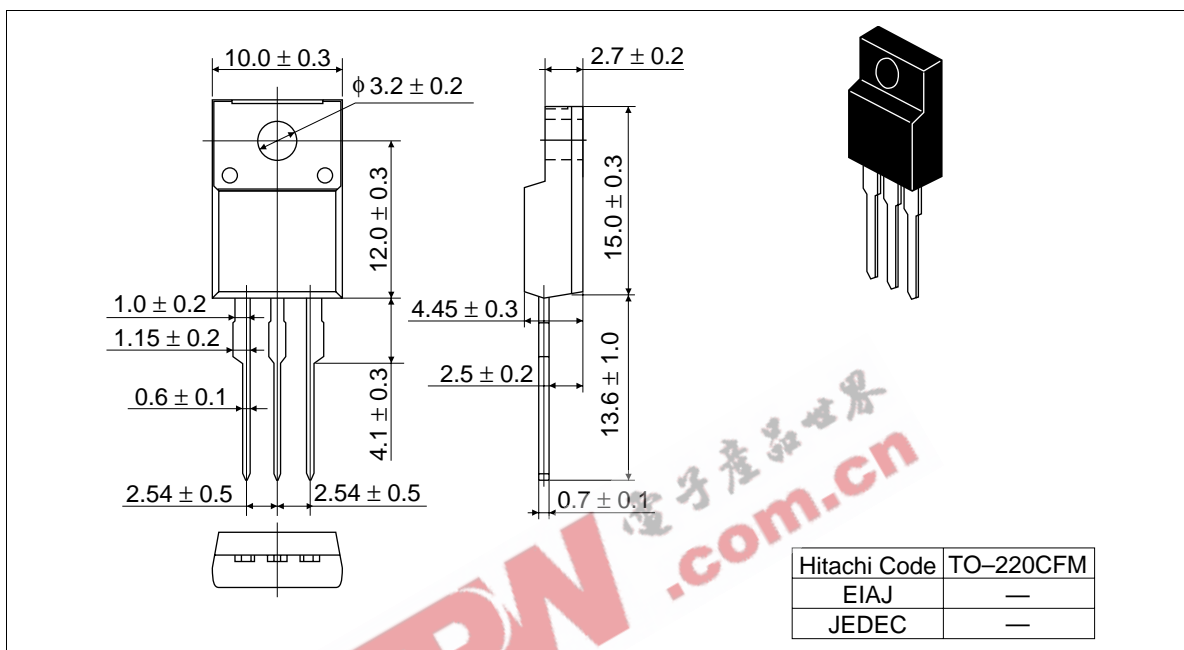
$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$





Package Dimensions

Unit: mm



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