10N80TF

Perfect MOS N-MOSFET 800V, 0.7Ω, 10A

重庆平伟实业股份有限公司

Features

- Uses PingWei advanced PerfectMOS technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g x R_{DS(on)}$ product(FOM)
- Excellent Low Ciss
- Qualified according to JEDEC criteria

RoHS HF

100% DVDS Tested
100% AvalancheTested

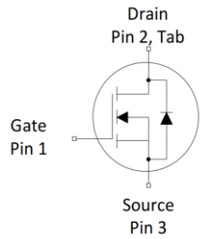
Applications

- PFC stages, hard switching PWM stages and resonant switching
- PWM stages for e.g. PC Silverbox, Adapter, LCD & PDP TV, Lighting, Server, Telecom and UPS

Product Summary

V_{DS}	800V
$R_{DS(on)@10V\ typ}$	0.7Ω
I_D	10A

TO-220TF-3L



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
10N80TF	10N80TF	TO-220TF-3L	Tube	N/A	N/A	50pcs

Absolute Maximum Ratings

Parameter	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	800	V
Continuous drain current[1)] T_C = 25°C T_C = 100°C	I_D	 10 6	A
Pulsed drain current (T_C = 25°C)	$I_{D\ pulse}$	39	A
Avalanche energy, single pulse (L=10mH)	E_{AS}	281	mJ
Gate-Source voltage	V_{GS}	±30	V
Power dissipation T_C = 25°C	P_{tot}	 43	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	Tsold	260	°C

1)TO-220CB equivalent. Limited by Tj max. Tj = 25C. Maximum duty cycle D=0.5

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	RthJC	-	-	2.9	°C/W	-
Thermal resistance, junction - ambient(min. footprint)	RthJA	-	-	62.5	°C/W	-

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	**Symbol**	**Value**			**Unit**	**Test Condition**
		min.	**typ.**	**max.**		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	800	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	3	-	5	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=800V,V_{GS}=0V T_j=25°C T_j=150°C
Gate-source leakage current	I_{GSS}	-	-	±100	nA	V_{GS}=±30V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	0.7	0.9	Ω	Vgs=10V,Id=5A
Transconductance	g_{fs}	-	12	-	S	V_{DS}=10V,I_D=5A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	2833	-	pF	V_{GS}=0V, V_{DS}=25V, f=1MHz
Output Capacitance	C_{oss}	-	228	-		
Reverse Transfer Capacitance	C_{rss}	-	5	-		
Gate Total Charge	Q_G	-	59	-	nC	Vds=400V,Id=5A ,Vgs=10V
Gate-Source charge	Q_{gs}	-	16	-		
Gate-Drain charge	Q_{gd}	-	22	-		
Turn-on delay time	$t_{d(on)}$	-	17	-	ns	V_{GS}=10V, V_{DD}=400V, R_{G_ext}=2.5Ω,I_D=2.7A
Rise time	t_r	-	15	-		
Turn-off delay time	$t_{d(off)}$	-	49	-		
Fall time	t_f	-	39	-		
Gate resistance	R_G	-	1	-	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	-	1.5	V	V_{GS}=0V,I_{SD}=5A
Body Diode Continuous Forward Current	Is	-	-	10	A	TC = 25°C
Body Diode Pulsed Current	Is pulse	-	-	39	A	TC = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	401	-	ns	I_F=5A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	4.2	-	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

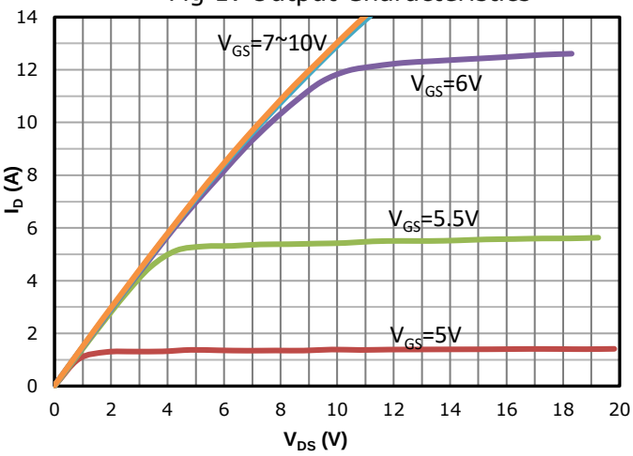


Fig 2: Transfer Characteristics

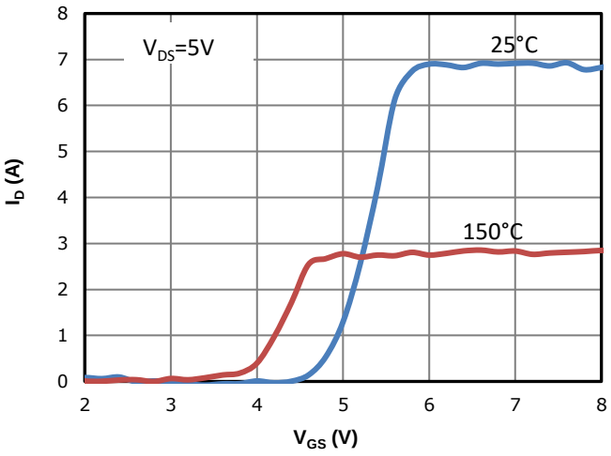


Fig 3: Rds(on) vs Drain Current and Gate Voltage

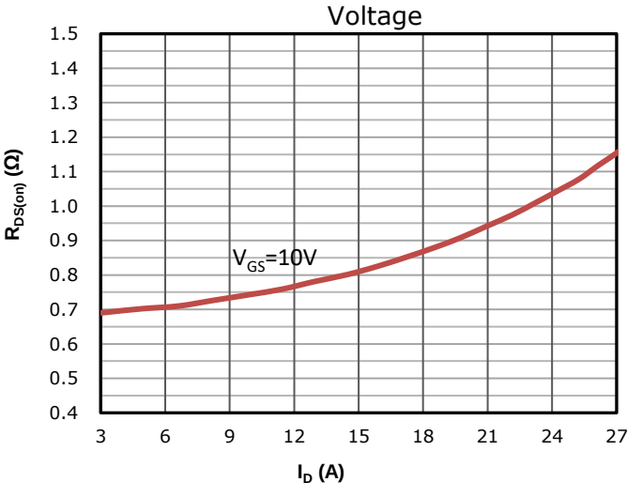


Fig 4: Rds(on) vs Gate Voltage

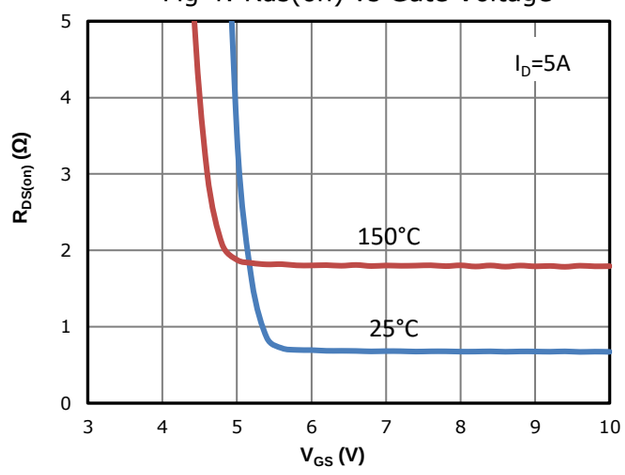


Fig 5: Rds(on) vs. Temperature

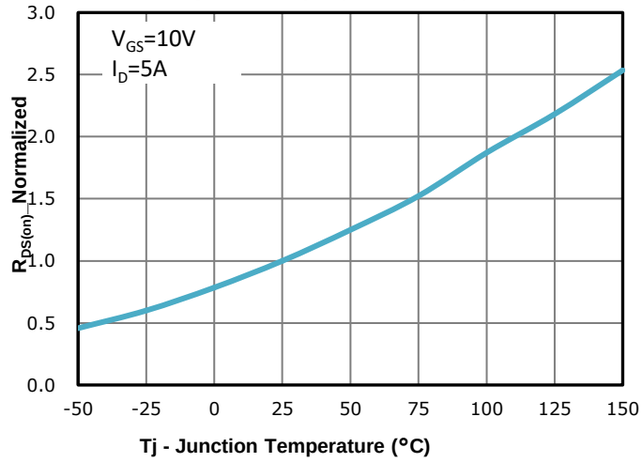


Fig 6: Vgs(th) vs. Temperature

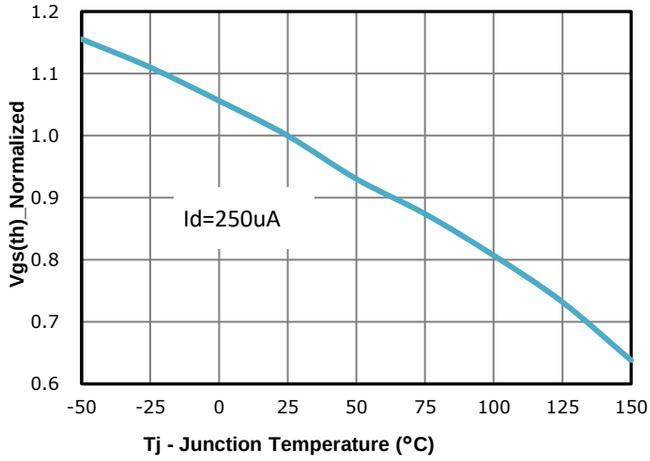


Fig 7: BVdss vs. Temperature

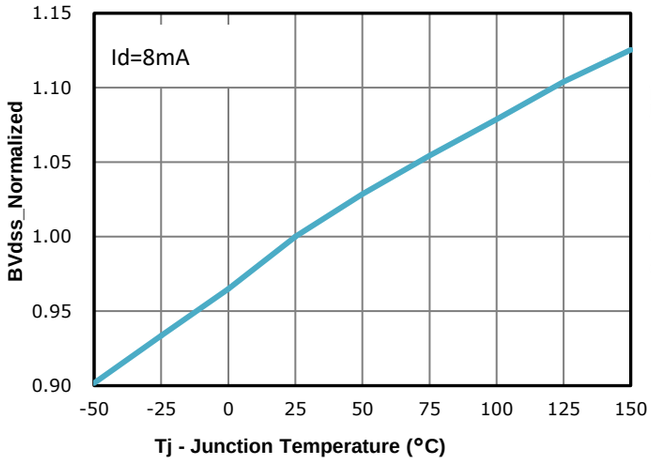


Fig 8: Capacitance Characteristics

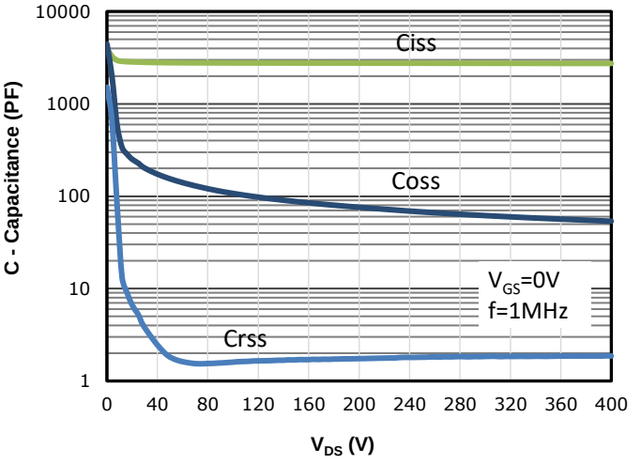


Fig 9: Gate ChargeCharacteristics

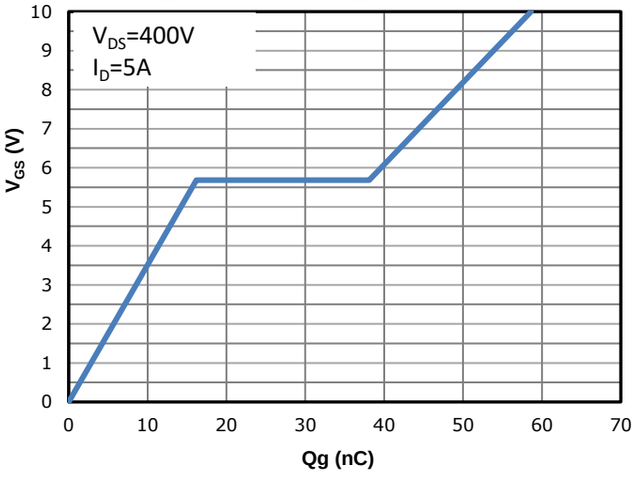


Fig 10: Body-diode Forward Characteristics

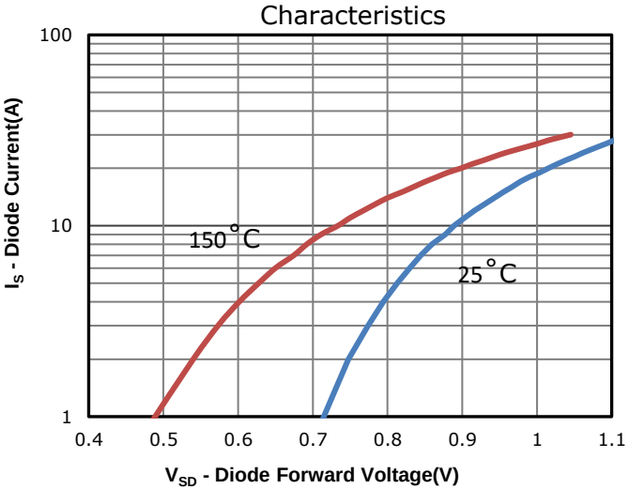


Fig 11: Power Dissipation

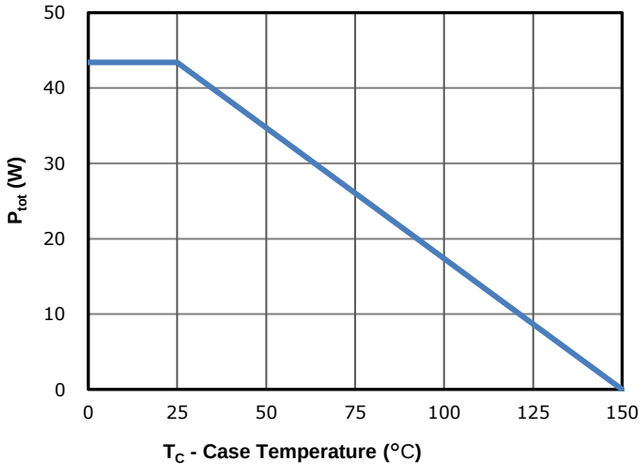


Fig 12: Drain Current Derating

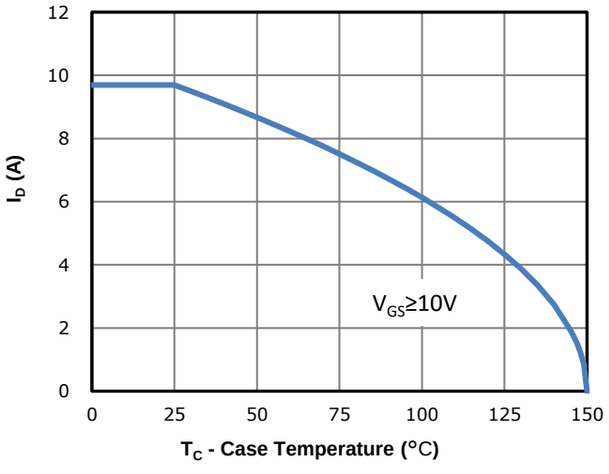


Fig 13: Safe Operating Area

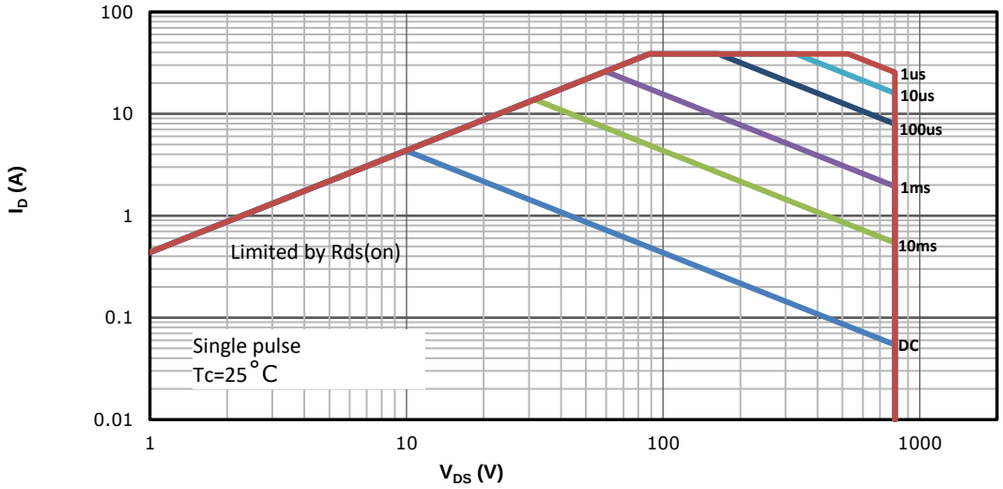
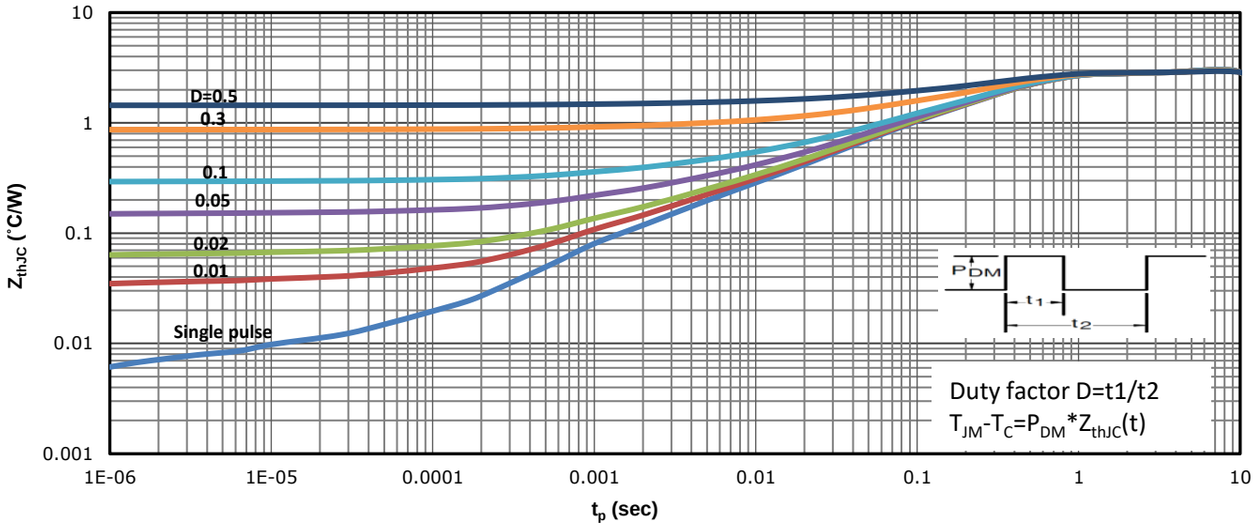
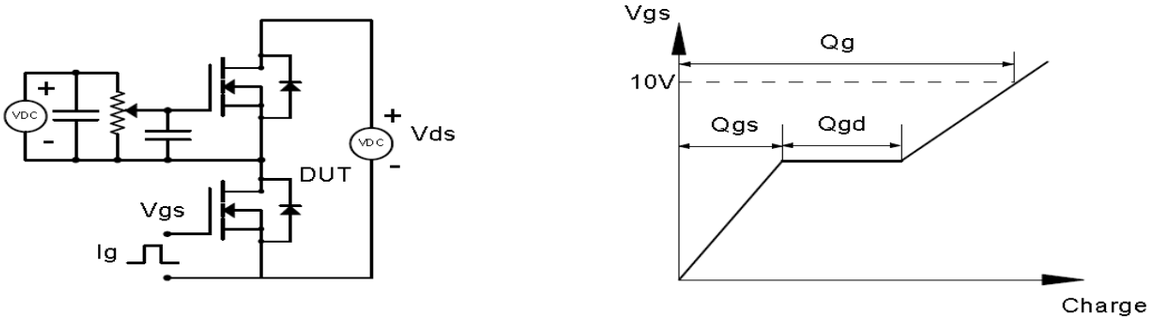


Fig 14: Max. Transient Thermal Impedance

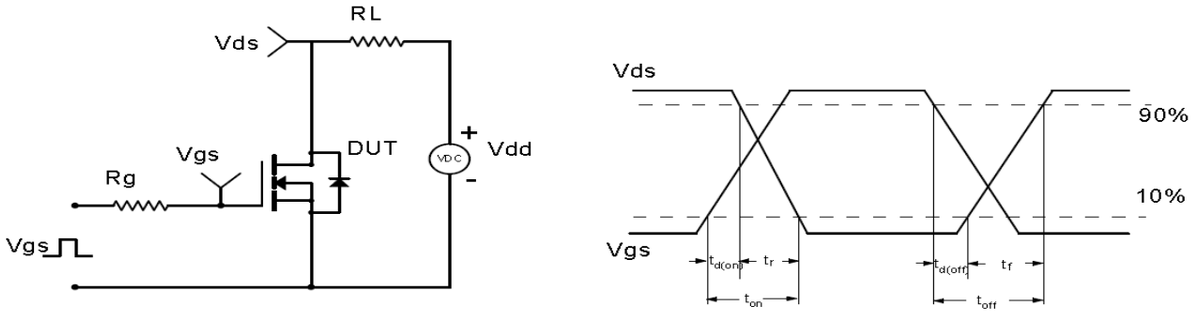


Test Circuit & Waveform

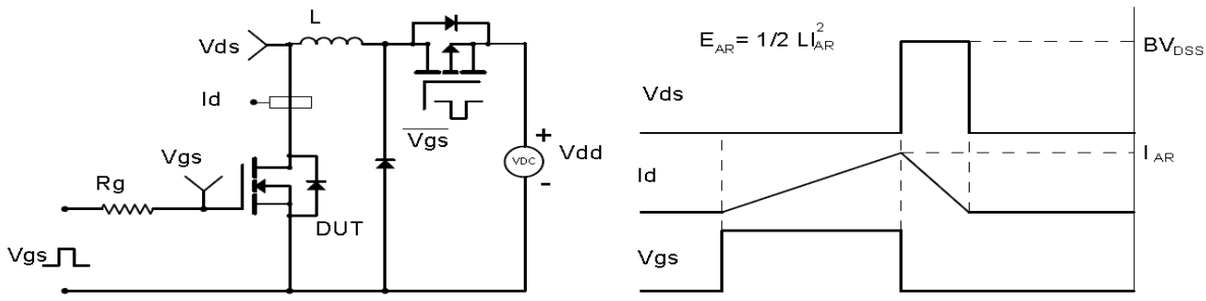
Gate Charge Test Circuit & Waveform



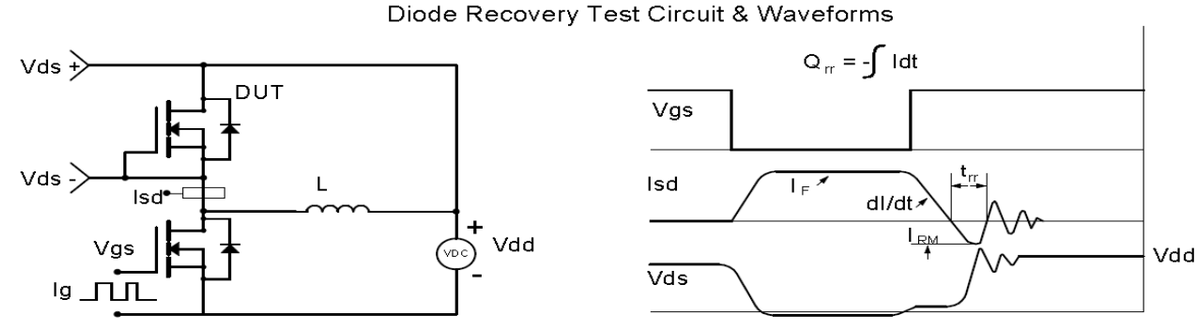
Resistive Switching Test Circuit & Waveforms



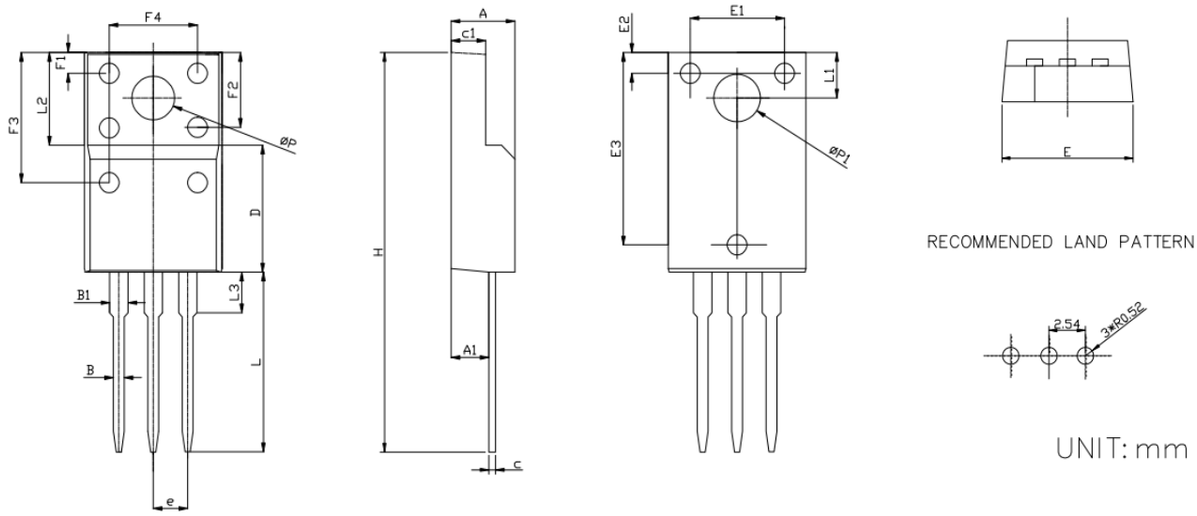
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: TO-220TF-3L



SYMBOL	MILLIMETERS MIN	MAX	INCHES MIN	MAX
A	4.5		0.177	
	2.63	2.89	0.104	0.114
B	0.75	0.90	0.030	0.035
B1	1.15	1.55	0.045	0.061
C	0.40	0.60	0.016	0.024
C1	2.34	2.74	0.092	0.108
D	8.87	9.47	0.349	0.373
e	2.54		0.100	
E	9.86	10.46	0.388	0.412
E1	6.86	7.06	0.270	0.278
E2	1.40	1.60	0.055	
E3	13.80		0.543	
F1	1.40	1.60	0.055	
F2	5.15		0.203	
F3	9.10	9.70	0.358	0.382
F4	6.70	7.30	0.264	0.287
H	28.50	29.50	1.122	1.161
L	12.58	13.38	0.495	0.527
L1	3.15	3.45	0.124	0.136
L2	6.70		0.264	
L3	2.63	3.23	0.104	0.127
φP	2.90	3.48	0.114	0.137
φP1	3.15	3.75	0.124	0.148

Disclaimer

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