28N50Y

Perfect MOS N-MOSFET 500V, 145mΩ, 28A

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

100% DVDS Tested
100% AvalancheTested

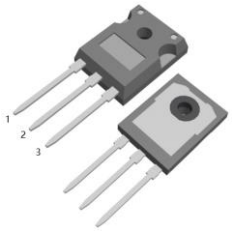
Applications

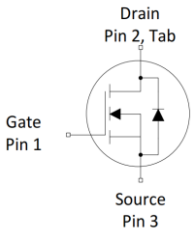
- PFC stages, hard switching PWM stages and resonant switching
- PWM stages for e.g. PC Silverbox, Adapter, LCD & PDP TV, Lighting, Server, Telecom and UPS

Product Summary

V_{DS}	500V
$R_{DS(on)@10V\ typ}$	145mΩ
I_D	28A

TO-247-3L





Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
28N50Y	28N50Y	TO-247-3L	Tube	N/A	N/A	30pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	500	V
Continuous drain current T_C = 25°C T_C = 100°C	I_D	 28 17	A
Pulsed drain current (T_C = 25°C)	$I_{D\ pulse}$	110	A
Avalanche energy, single pulse (L=10mH)	E_{AS}	1593	mJ
Gate-Source voltage	V_{GS}	±30	V
Power dissipation T_C = 25°C	P_{tot}	 417	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

Thermal Resistance

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case.	RthJC	-	-	0.3	°C/W	-
Thermal resistance, junction - ambient(min. footprint)	RthJA	-	-	50	°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}	500	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	- -	- -	1 100	μA	V_{DS}=500V,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	$R_{DS(on)}$	-	145	210	mΩ	Vgs=10V,Id=14A
Transconductance	g_{fs}	-	30	-	S	V_{DS}=20V,I_D=14A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	5839	-	pF	V_{GS}=0V, V_{DS}=25V, f=1MHz
Output Capacitance	C_{oss}	-	451	-		
Reverse Transfer Capacitance	C_{rss}	-	12	-		
Gate Total Charge	Q_G	-	90	-	nC	Vds=250V,Id=14A ,Vgs=10V
Gate-Source charge	Q_{gs}	-	30	-		
Gate-Drain charge	Q_{gd}	-	17	-		
Turn-on delay time	$t_{d(on)}$	-	23	-	ns	V_{GS}=10V, V_{DD}=250V, R_{G_ext}=2.5Ω,I_D=14A
Rise time	t_r	-	17	-		
Turn-off delay time	$t_{d(off)}$	-	63	-		
Fall time	t_f	-	16	-		
Gate resistance	R_G	-	1.1	-	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}=14A
Body Diode Continuous Forward Current	Is	-	-	28	A	TC = 25°C
Body Diode Pulsed Current	Is pulse	-	-	110	A	TC = 25°C
Body Diode Reverse Recovery Time	t_{rr}	-	377	-	ns	I_F=14A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	-	4.07	-	uC	

Typical Performance Characteristics

Fig 1: Output Characteristics

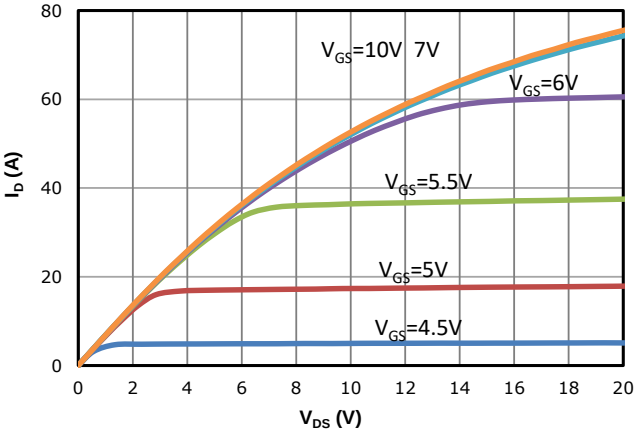


Fig 2: Transfer Characteristics

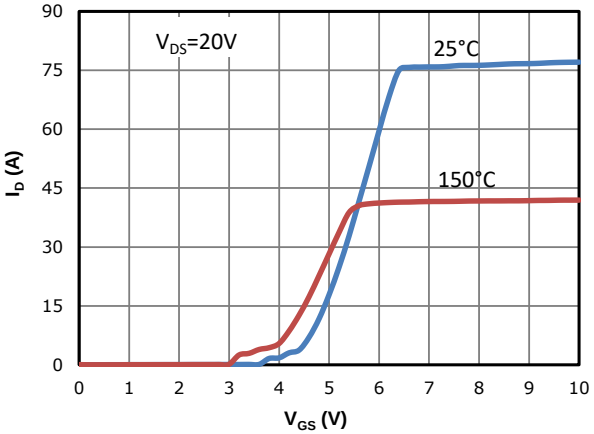


Fig 3: Rds(on) vs Drain Current and Gate Voltage

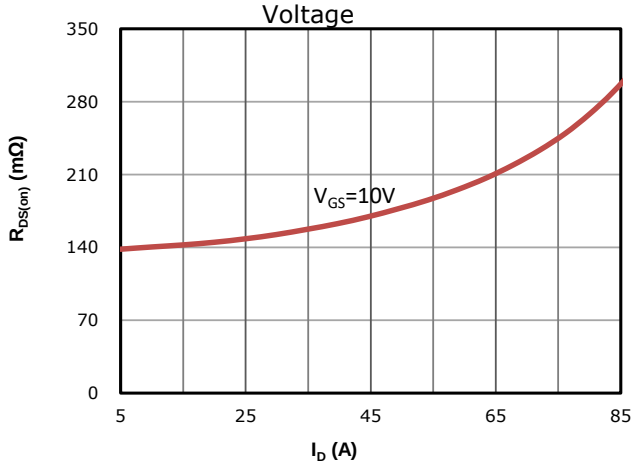


Fig 4: Rds(on) vs Gate Voltage

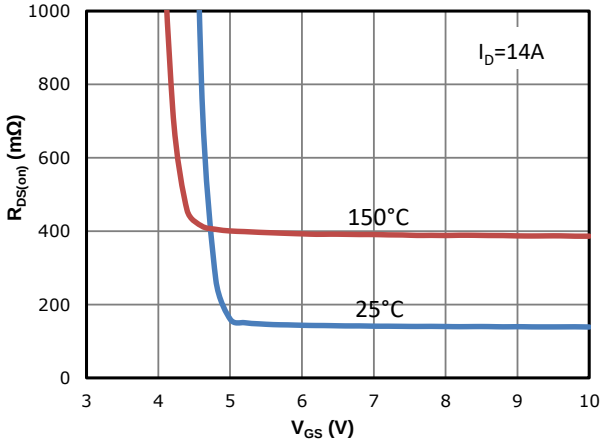


Fig 5: Rds(on) vs. Temperature

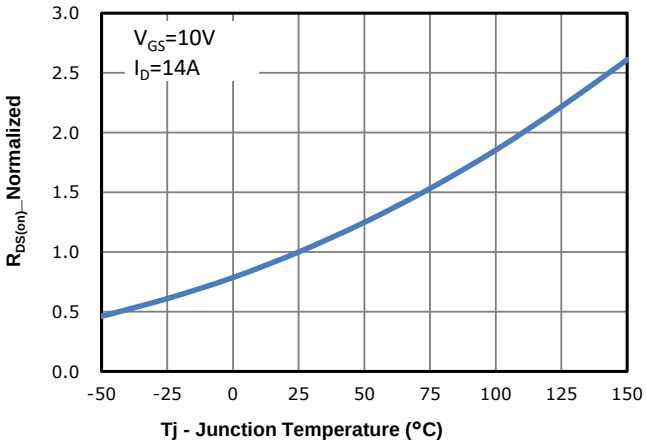


Fig 6: Vgs(th) vs. Temperature

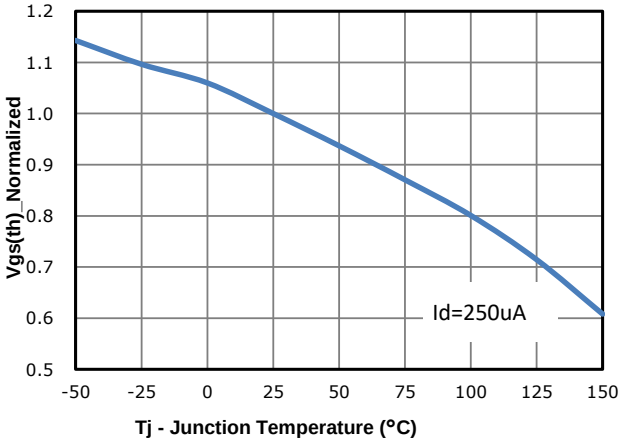


Fig 7: BVdss vs. Temperature

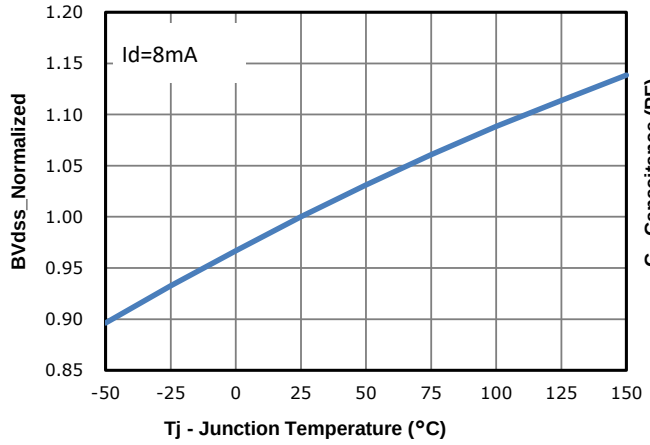


Fig 8: Capacitance Characteristics

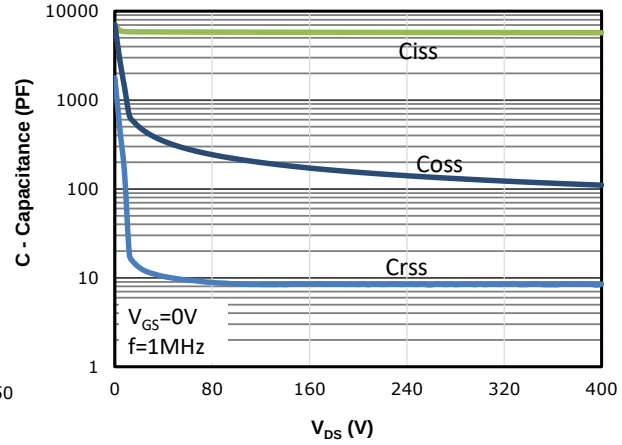


Fig 9: Gate ChargeCharacteristics

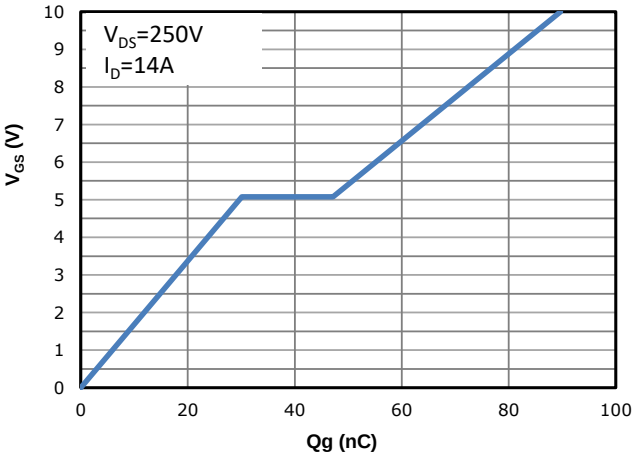


Fig 10: Body-diode Forward Characteristics

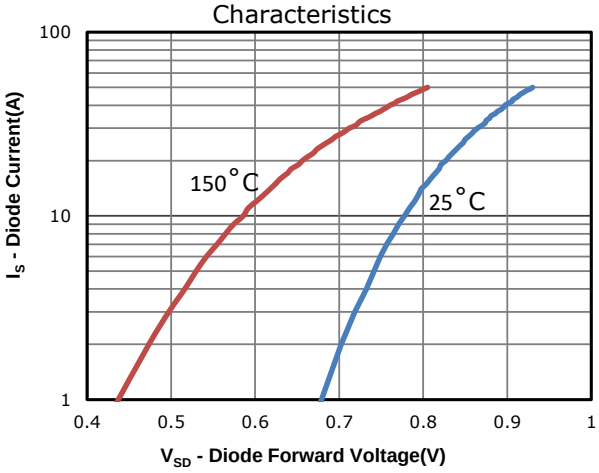


Fig 11: Power Dissipation

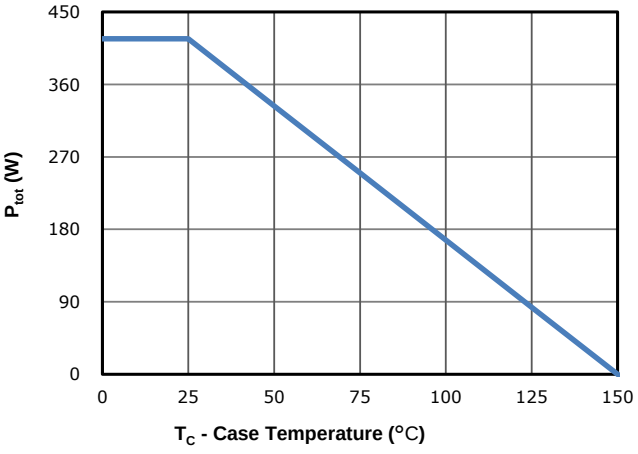


Fig 12: Drain Current Derating

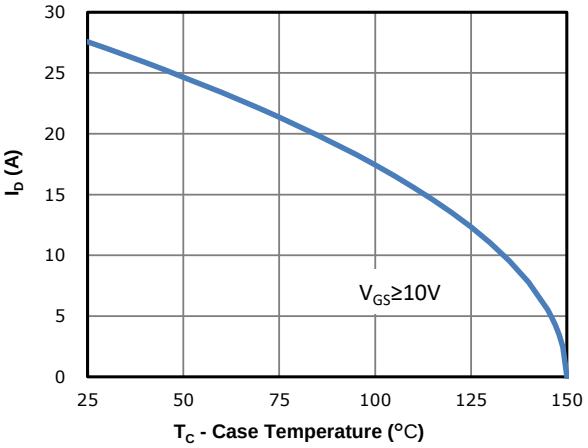


Fig 13: Safe Operating Area

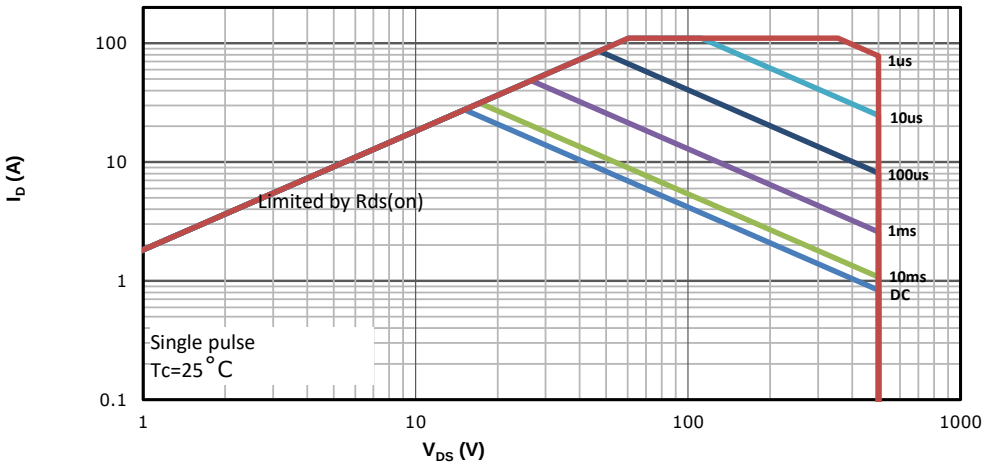
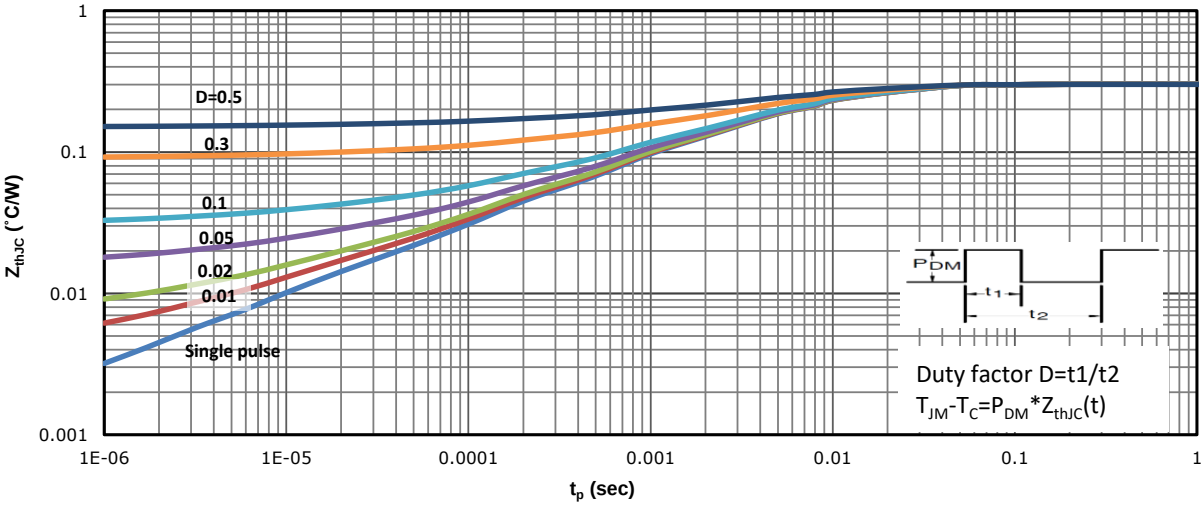
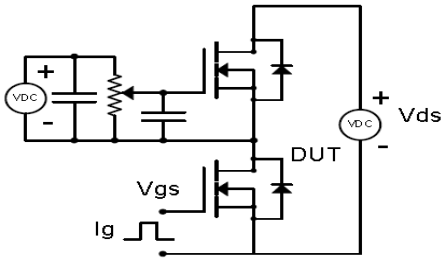


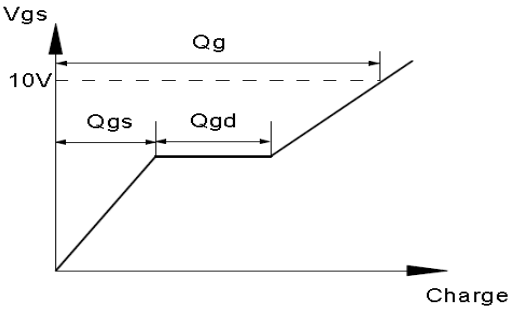
Fig 14: Max. Transient Thermal Impedance



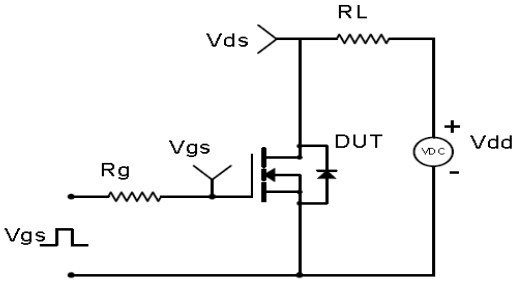
Test Circuit & Waveform

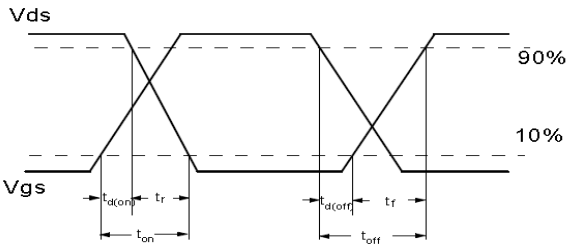
Gate Charge Test Circuit & Waveform



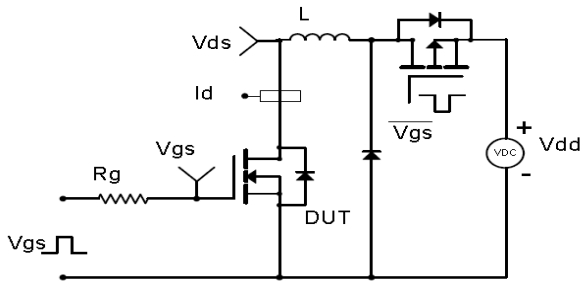


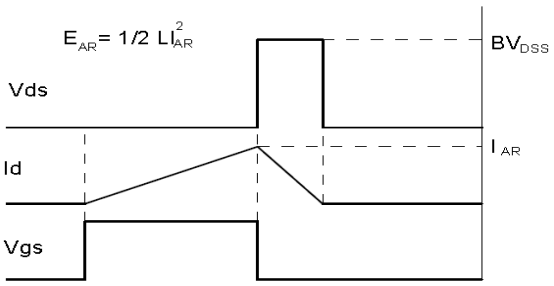
Resistive Switching Test Circuit & Waveforms



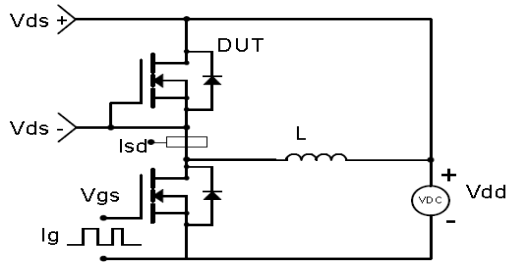


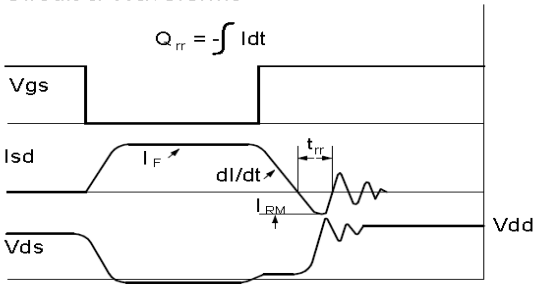
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



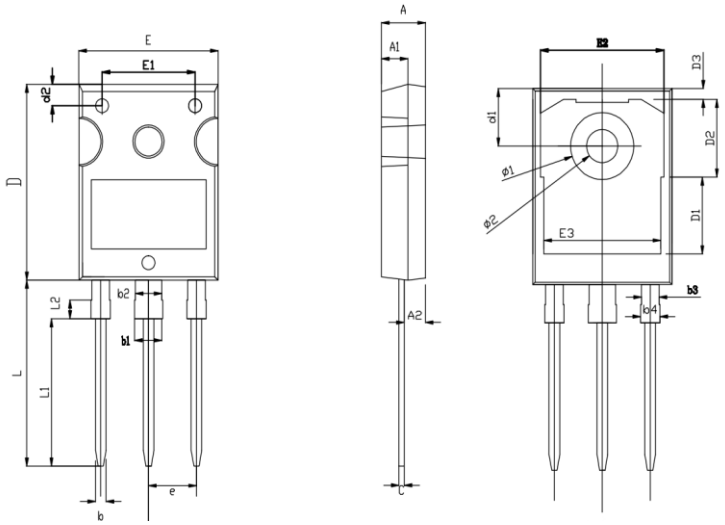


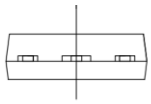
Diode Recovery Test Circuit & Waveforms



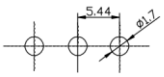


Package Outline: TO-247-3L





RECOMMENDED LAND PATTERN



UNIT: mm

SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.20	0.189	0.205
A1	2.80	3.20	0.110	0.126
A2	2.26	2.56	0.089	0.101
b	1.10	1.30	0.043	0.051
b1	2.90	3.20	0.114	0.126
b2	2.90	3.10	0.114	0.122
b3	1.90	2.10	0.075	0.083
b4	2.00	2.20	0.079	0.087
c	0.50	0.70	0.020	0.028
D	20.80	21.20	0.819	0.835
D1	8.23		0.324	
D2	8.32		0.328	
D3	1.17		0.046	
d1	6.00	6.30	0.236	0.248
d2	2.20	2.40	0.087	0.094
E	15.60	16.00	0.614	0.630
E1	10.50		0.413	
E2	14.02		0.552	
E3	13.50		0.531	
e	5.34	5.54	0.210	0.218
L	19.72	20.12	0.776	0.792
L1	15.79		0.622	
L2	1.98		0.078	
φ1	7.10	7.30	0.280	0.287
φ2	3.50	3.70	0.138	0.146

Disclaimer

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