

Product Summary

Part #	V_{DS}	$R_{DS(on).typ}$	I_D
DP95R450AJ	950V	0.35Ω	14A

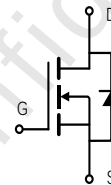
Features

- Super_Junction technology
- Low conduction resistance, superior switching performance
- High avalanche energy
- Better efficiency due to very low FOM

Applications

- Power factor correction
- Charger
- LED Lighting

TO-220F



100% Avalanche Tested

100% Rg Tested

Package Marking and Ordering Information

Part #	Marking	Package	Packing
DP95R450AJ	65R450AJ	TO-220F	Tube/Reel


Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	950	V
Continuous drain current $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	I_D	14 9.2	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D \text{ pulse}}$	42	A
Avalanche energy, single pulse ($L=30\text{mH}$, $R_g=25$) ^[1]	E_{AS}	120	mJ
Peak diode recovery dv/dt ^[2]	dv/dt	50	V/ns
Gate-Source voltage	V_{GS}	±30	V
Power dissipation ($T_C = 25^\circ\text{C}$)	P_{tot}	38	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+150	°C

[1]. EAS is tested at starting $T_j = 25^\circ\text{C}$, $V_{GS} = 10\text{V}$.

[2]. Identical low side and high side switch with identical R_g

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	3.3	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	62	

Electrical Characteristic (at $T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		

Static Characteristic

Drain-source breakdown voltage	BV_{DSS}	950	-	-	V	$V_{GS}=0V, I_D=250\mu A$
Gate threshold voltage	$V_{GS(th)}$	3.5	-	4.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS}=950V, V_{GS}=0V$ $T_j=25^\circ\text{C}$
		-	-	100		$T_j=125^\circ\text{C}(V_{DS}=520V)$
Gate-source leakage current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 30V, V_{DS}=0V$
Drain-source on-state resistance	$R_{DS(on)}$	-	0.35	0.45	Ω	$T_j=25^\circ\text{C}$ $V_{GS}=10V, I_D=7.0A$
Gate resistance	R_g	-	5	-	Ω	$V_{GS}=0V, V_{DS}=0V,$ $f=1\text{MHz}$
Transconductance ^[2]	g_{fs}	-	8	-	S	$V_{DS}=20V, I_D=7.0A$

Dynamic Characteristic^[3]

Input Capacitance	C_{iss}	-	2010	-	pF	$V_{GS}=0V, V_{DS}=100V,$ $f=250\text{MHz}$
Output Capacitance	C_{oss}	-	48	-		
Reverse Transfer Capacitance	C_{rss}	-	0.7	-		
Gate Total Charge($V_{GS}=10V$)	Q_g	-	45	-	nC	$V_{GS}=10V, V_{DS}=760V,$ $I_D=7.0A, f=1\text{MHz}$
Gate-Source charge	Q_{gs}	-	12	-		
Gate-Drain charge	Q_{gd}	-	19	-		
Turn-on delay time	$t_{d(on)}$	-	71	-	ns	$V_{GS}=10V, V_{DD}=760V,$ $R_{G_ext}=10\Omega$
Rise time	t_r	-	16	-		
Turn-off delay time	$t_{d(off)}$	-	68	-		
Fall time	t_f	-	9	-		

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.8	1	V	$V_{GS}=0V, I_{SD}=7A$
Diode continuous forward current	I_s	-	-	14	A	$TC = 25^{\circ}C$
Diode pluse current	$I_{s\ pluse}$	-	-	42	A	$TC = 25^{\circ}C$
Body Diode Reverse Recovery Time ^[3]	t_{rr}	-	358	-	ns	$I_F=7A, di/dt=100A/\mu s$
Body Diode Reverse Recovery Charge ^[3]	Q_{rr}	-	5.2	-	uC	

[3]. Defined by design. Not subject to production test

Typical Performance Characteristics

Fig 1: Output Characteristics

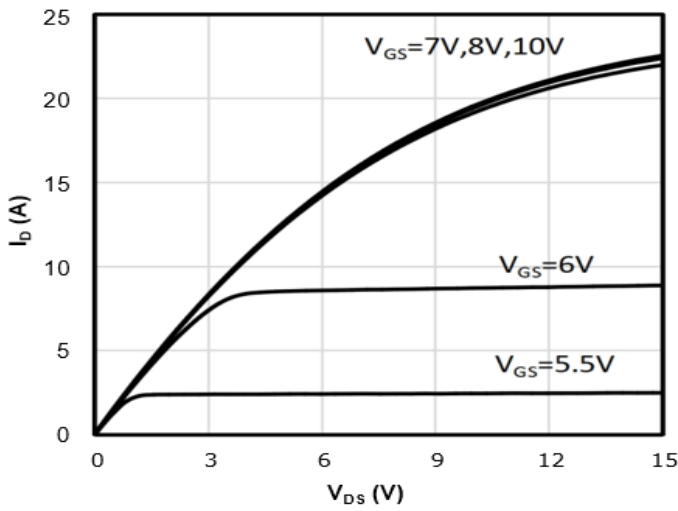


Fig 2: Transfer Characteristics

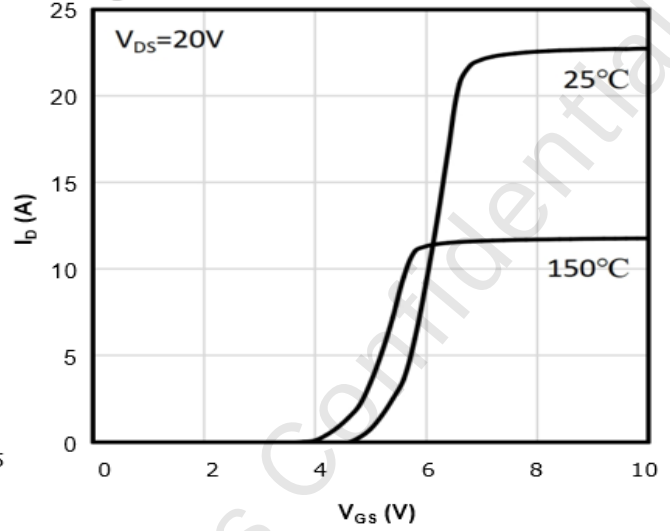


Fig 3: $R_{DS(on)}$ vs Drain Current and Gate Voltage

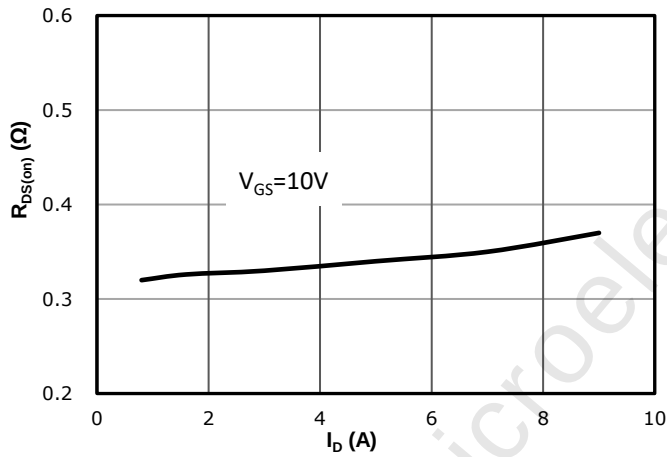


Fig 4: Break Down vs. Junction Temperature

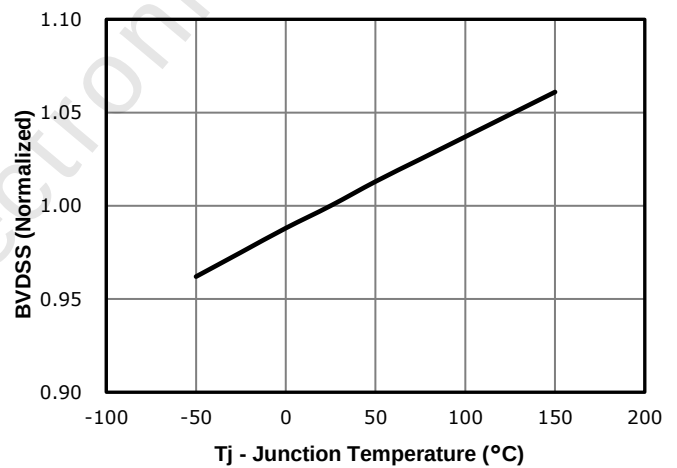


Fig 5: $R_{DS(on)}$ vs. Temperature

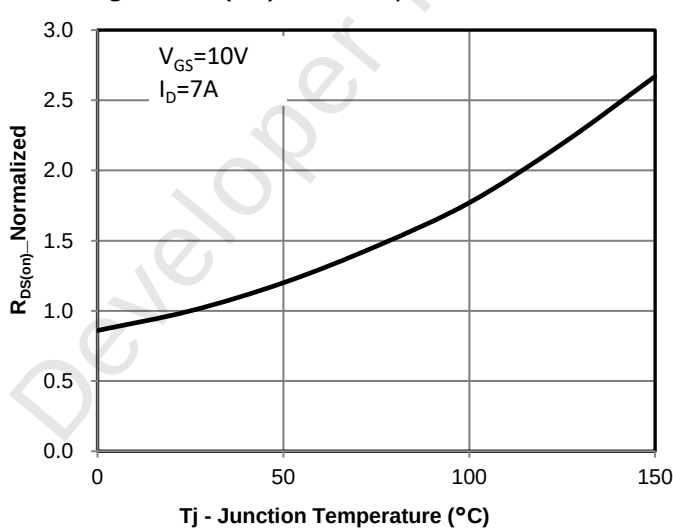


Fig 6: Capacitance Characteristics

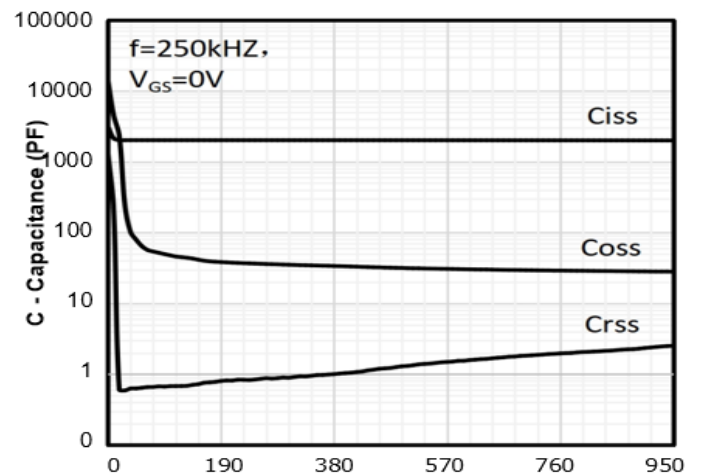


Fig 7: Gate Charge Characteristics

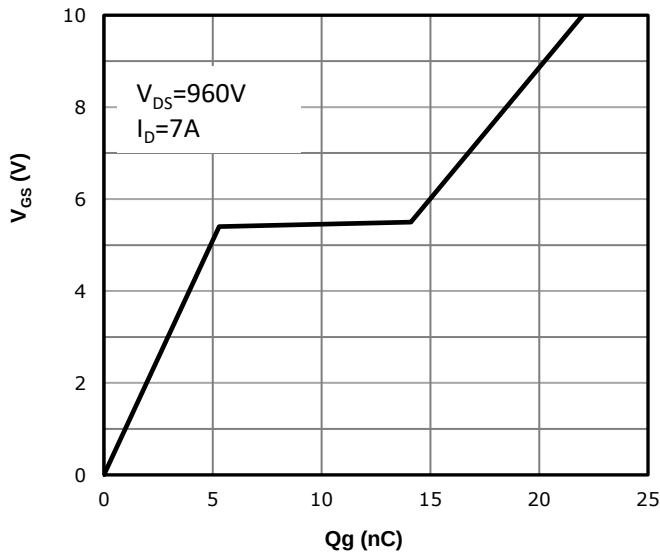


Fig 8: Body-diode Forward Characteristics

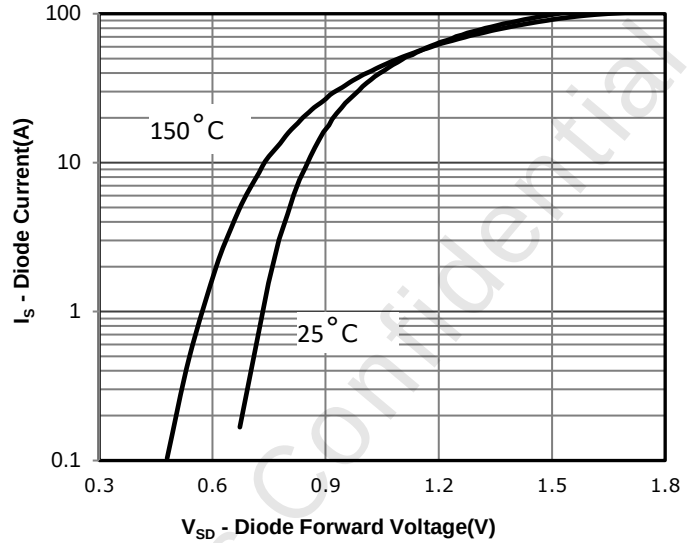


Fig 9: Drain Current Derating

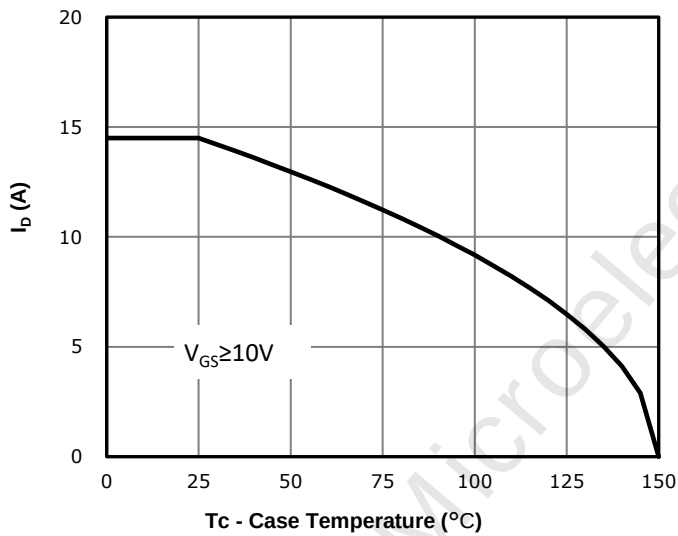


Fig 10: Safe Operating Area

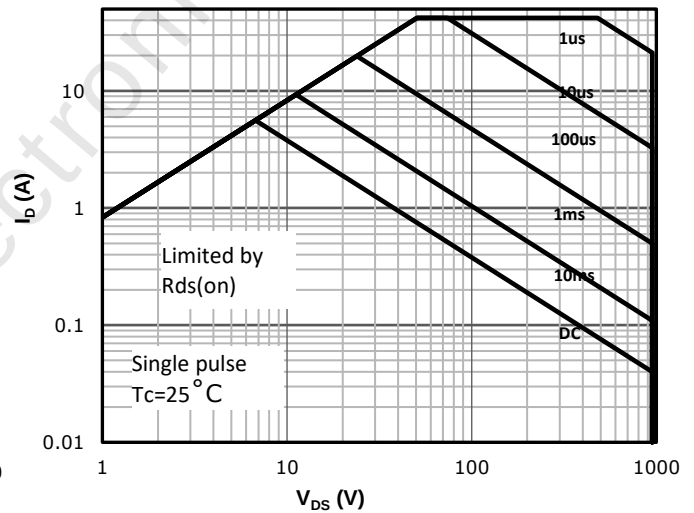
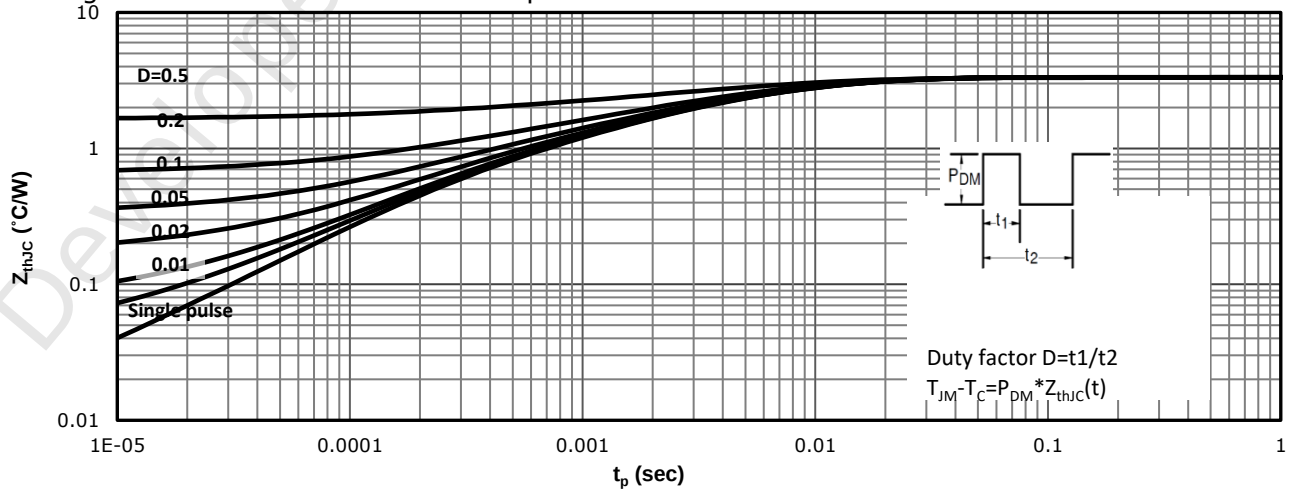
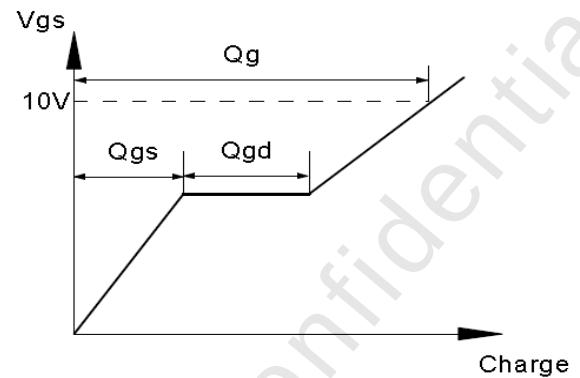
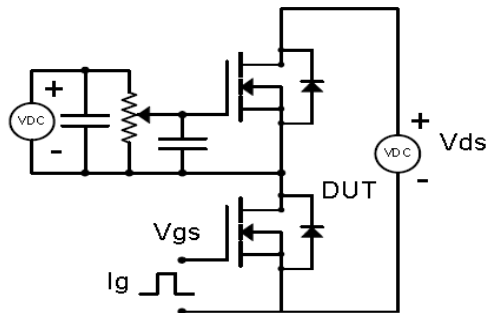


Fig 11: Max. Transient Thermal Impedance

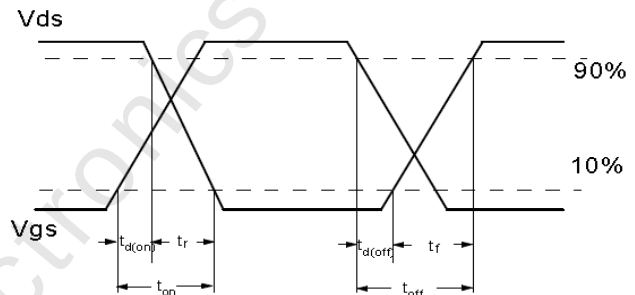
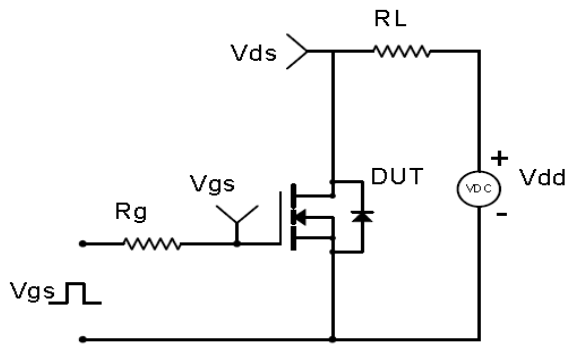


Test Circuit & Waveform

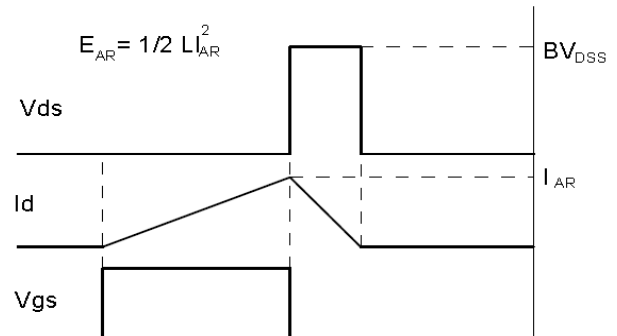
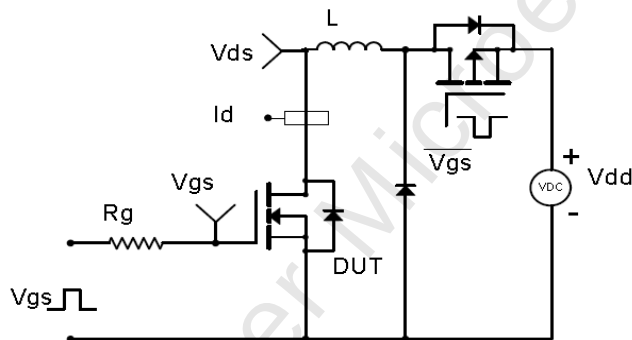
Gate Charge Test Circuit & Waveform



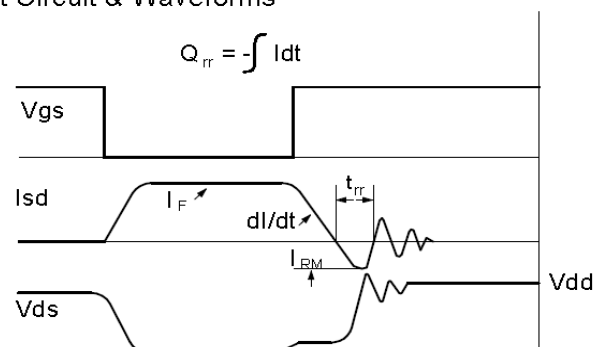
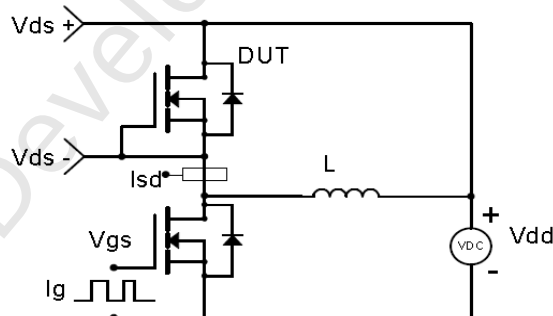
Resistive Switching Test Circuit & Waveforms



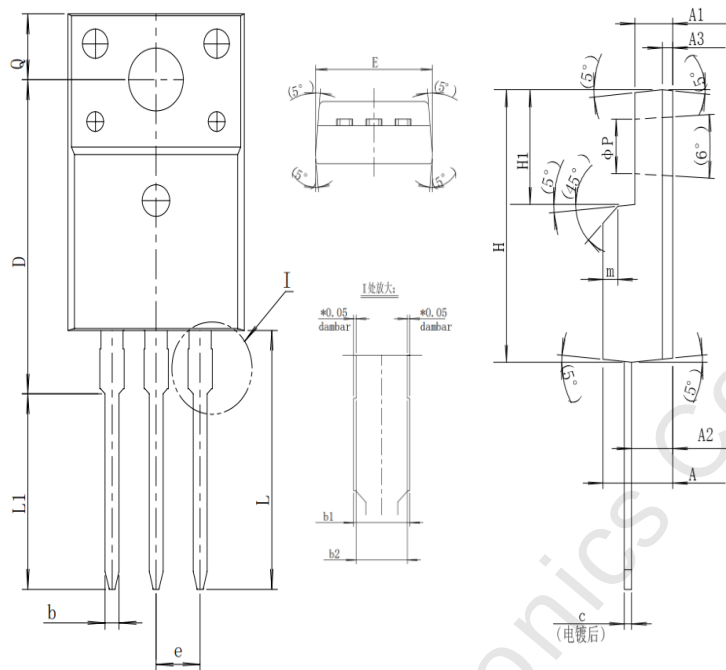
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

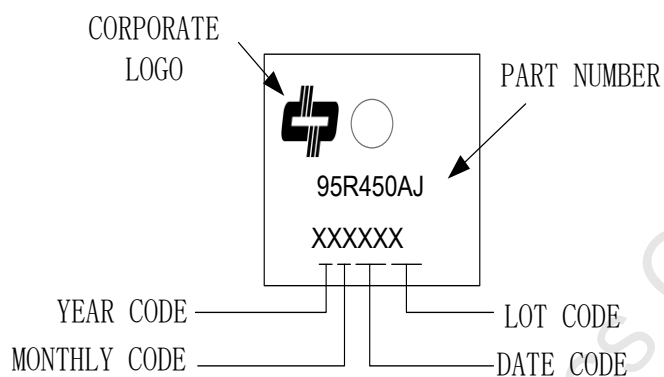


Package Outline: TO-220F



Symbol	Dimensions In Millimeters		
	Min.	NOM	Max.
A	4.60	4.70	4.80
A1	2.44	2.54	2.64
A2	2.65	2.75	2.85
A3	0.7 REF		
b	0.70	0.80	0.90
b1	1.28	1.38	1.47
b2	1.18	1.28	1.39
c	0.45	0.50	0.60
D	15.64	15.75	15.85
E	10.06	10.16	10.26
e	2.54 BSC		
H	15.77	15.87	15.97
H1	6.58	6.68	6.78
L	12.68	12.98	13.28
L1	9.60	9.80	10.00
Q	3.20	3.30	3.40
ΦP	3.08	3.18	3.28
m	0.50	1.00	1.50

Part Marking Information



Revision History

Revision	Major changes
1.0	Release for formal version

重要声明Important Notice

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