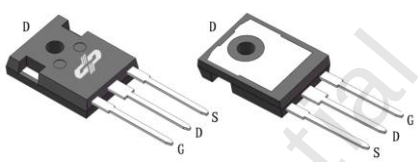
DP95R650KJ

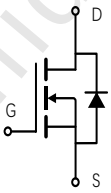
SJMOS N-MOSFET 950V, 0.52Ω, 10A

Product Summary

Part #	V_{DS}	$R_{DS(on).typ}$	I_D
DP95R650KJ	950V	0.52Ω	10A

TO-247





100% Avalanche Tested

100% Rg Tested

Features

- Uses advanced Super-junction MOSFET technology
- Better $R_{DS(on)}$ enabled by a low $R_{DSon.sp}$, low conduction losses
- Excellent $Q_g x R_{DS(on)}$ product(FOM)
- Qualified according to JEDEC criteria

Applications

- LED/LCD/PDP TV and monitor Lighting
- Charger/ Adaptor
- Power Supply

Package Marking and Ordering Information

Part #	Marking	Package	Packing
DP95R650KJ	95R650KJ	TO-247	Tube

Halogen-Free

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	950	V
Continuous drain current T_C = 25°C T_C = 100°C	I_D	 10 6	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})	$I_{D\ pulse}$	29	A
Avalanche energy, single pulse (l=30mH, Rg=25)[1]	E_{AS}	183	mJ
Gate-Source voltage	V_{GS}	±30	V
Power dissipation (T_C = 25°C)	P_{tot}	147	W
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	°C

[1].EAS is tested at starting T_j = 25℃, V_{GS} = 10V.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case.	R_{thJC}	0.9	°C/W
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	48	

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}	950	-	-	V	V_{GS}=0V, I_D=250uA
Gate threshold voltage	$V_{GS(th)}$	3	3.5	4	V	V_{DS}=V_{GS},I_D=250uA
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	V_{DS}=950V,V_{GS}=0V T_j=25°C
Gate-source leakage current	I_{GSS}	-	-	±100	nA	V_{GS}=±30V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	-	0.52 1.55	0.60 -	Ω	V_{GS}=10V, I_D=5A T_j=25°C T_j=150°C
Gate resistance	R_g	-	5	-	Ω	V_{GS}=0V, V_{DS}=0V, f=1MHz
Transconductance[2]	g_{fs}	-	6	-	S	V_{DS}=20V,I_D=5A
Dynamic Characteristic[2]						
Input Capacitance	C_{iss}	-	1409	-	pF	V_{GS}=0V, V_{DS}=40V, f=1MHz
Output Capacitance	C_{oss}	-	66	-		
Reverse Transfer Capacitance	C_{rss}	-	5	-		
Gate Total Charge	Q_g	-	32	-	nC	V_{GS}=10V, V_{DS}=760V, I_D=5A, f=1MHz
Gate-Source charge	Q_{gs}	-	8	-		
Gate-Drain charge	Q_{gd}	-	14	-		
Turn-on delay time	$t_{d(on)}$	-	70	-	ns	V_{GS}=10V, V_{DD}=760V, R_{G_ext}=27Ω
Rise time	t_r	-	21	-		
Turn-off delay time	$t_{d(off)}$	-	58	-		
Fall time	t_f	-	11	-		

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	-	0.8	1.1	V	V_{GS}=0V,I_{SD}=5A
Diode continuous forward current	I_s	-	-	10	A	TC = 25°C
Diode pluse current	$I_{s\ pluse}$	-	-	29	A	TC = 25°C
Body Diode Reverse Recovery Time[2]	t_{rr}	-	343	-	ns	I_F=5A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge[2]	Q_{rr}	-	3820	-	nC	

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

Typical Performance Characteristics

Fig 1: Output Characteristics, Tj=25C

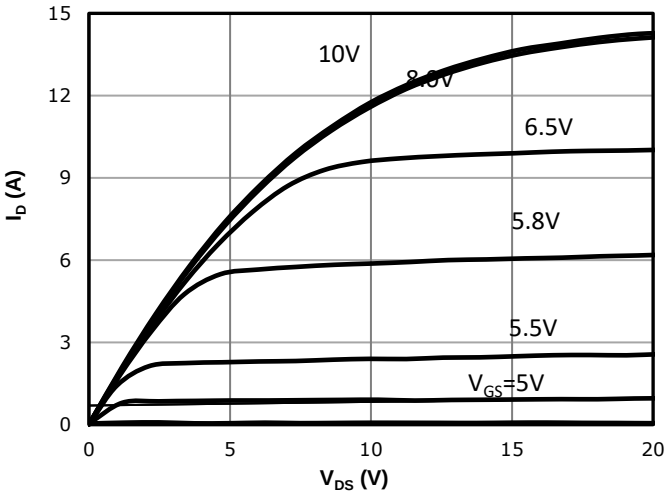


Fig 2: Output Characteristics, Tj=150C

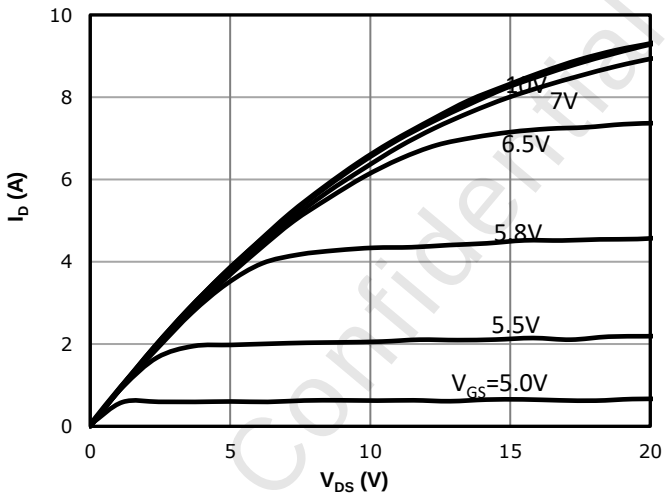


Fig 3: Transfer Characteristics

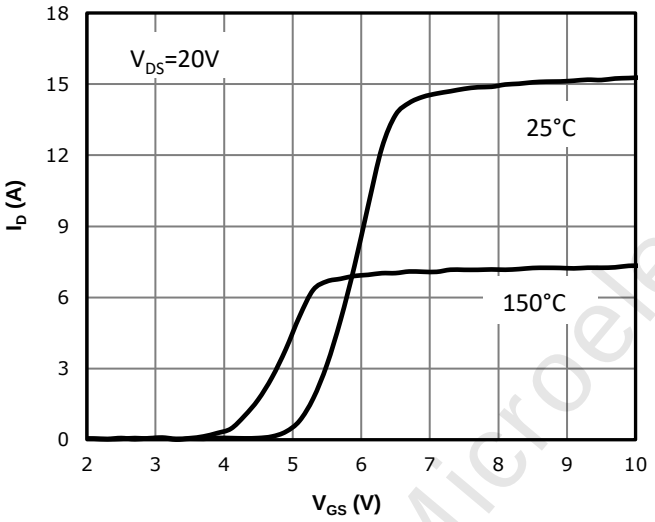


Fig 4: Rds(on) vs Drain Current and Gate Voltage

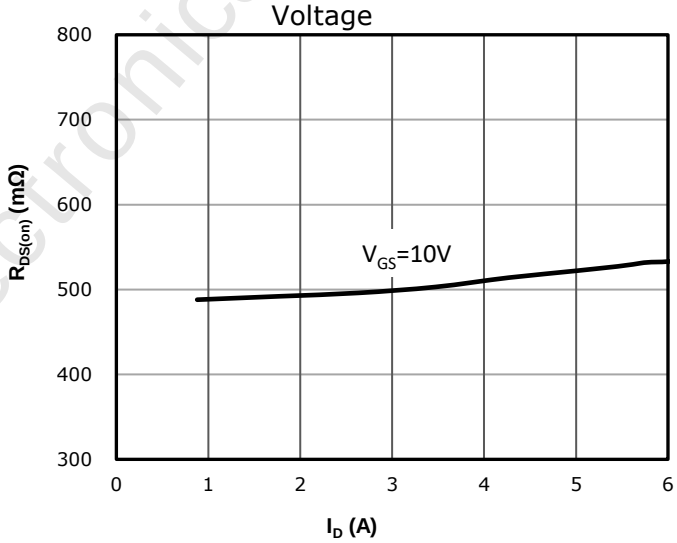


Fig 5: Rds(on) vs Gate Voltage

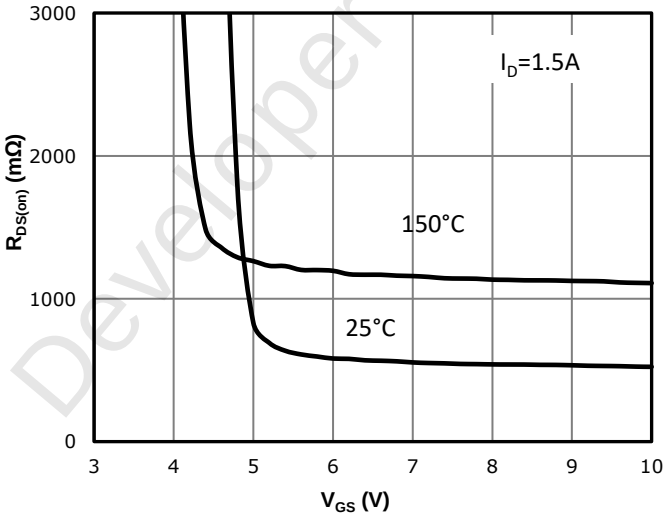


Fig 6: Rds(on) vs. Temperature

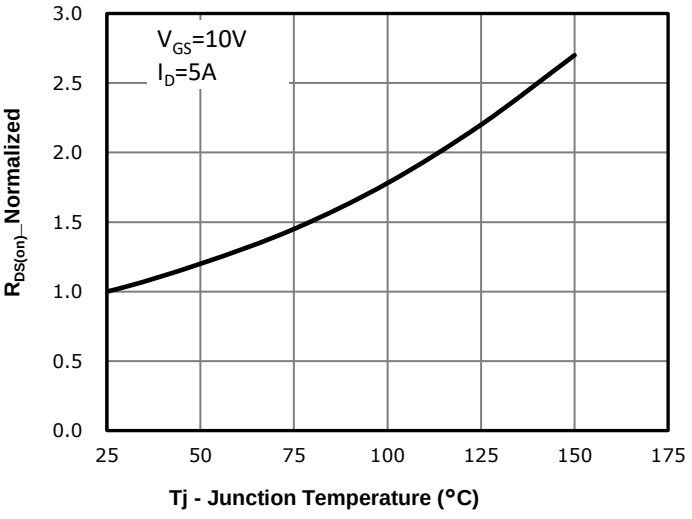


Fig 7: Capacitance Characteristics

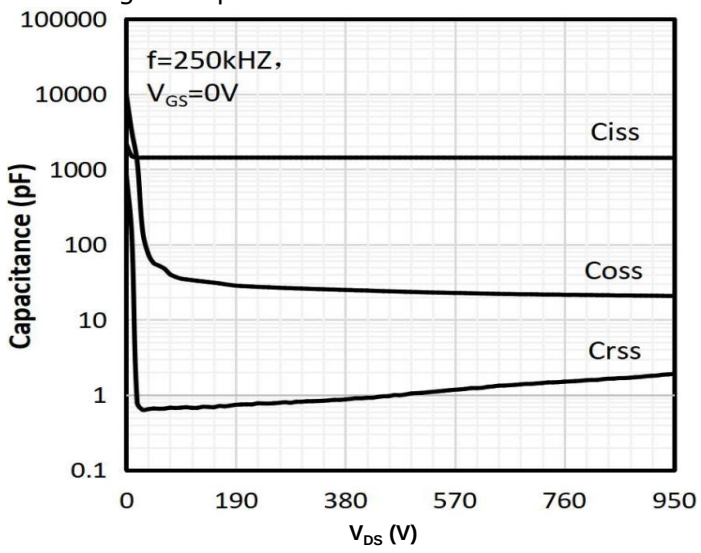


Fig 8: Gate Charge Characteristics

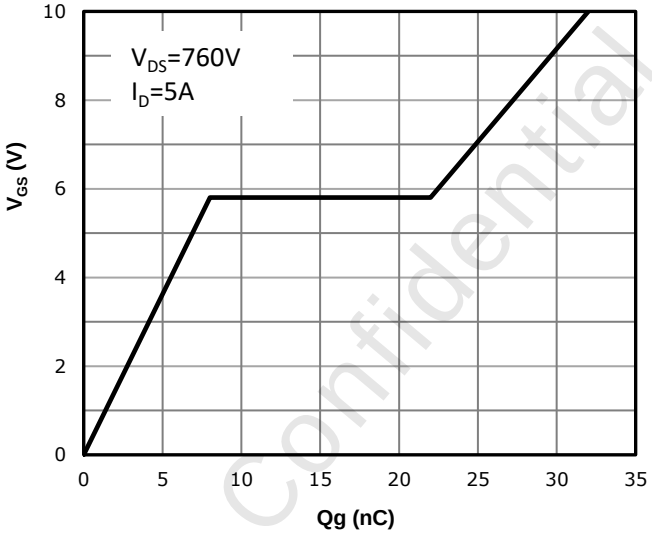


Fig 9: Body-diode Forward Characteristics

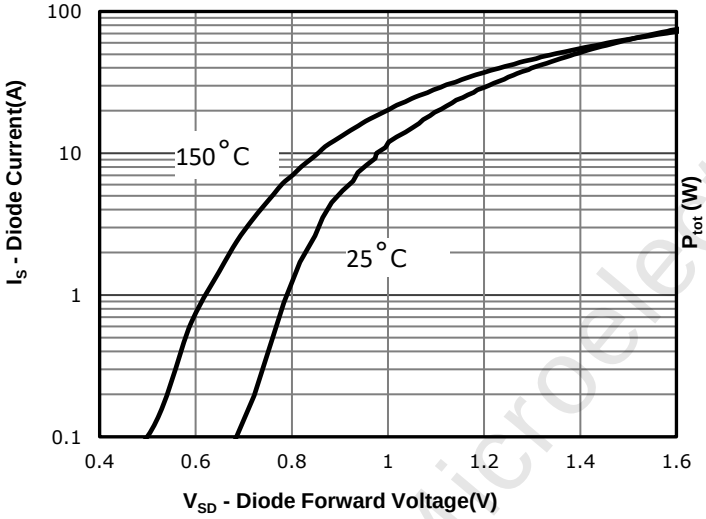


Fig 10: Power Dissipation

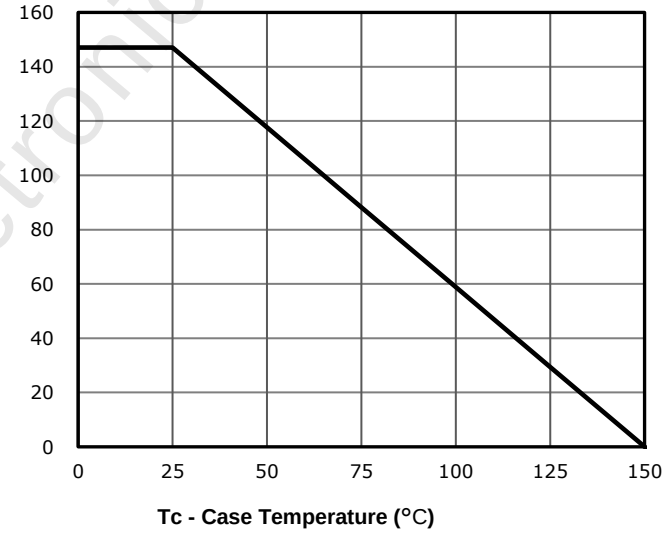


Fig 11: Drain Current Derating

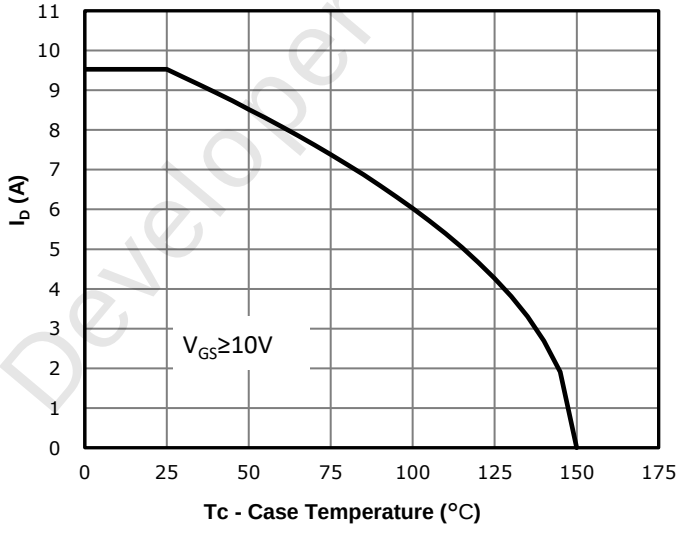


Fig 12: Safe Operating Area

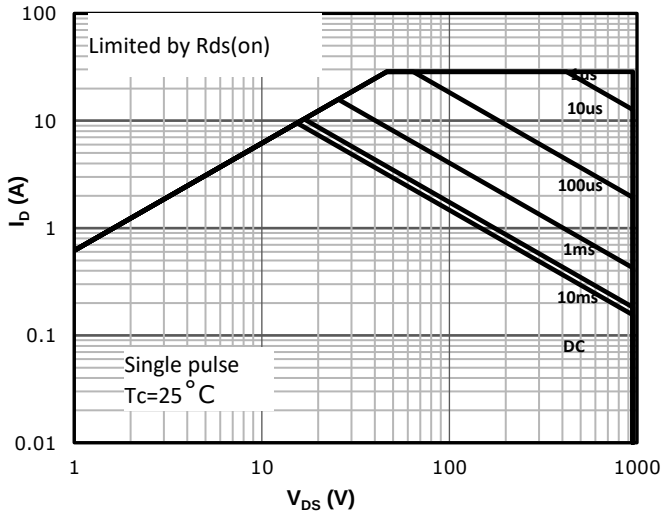
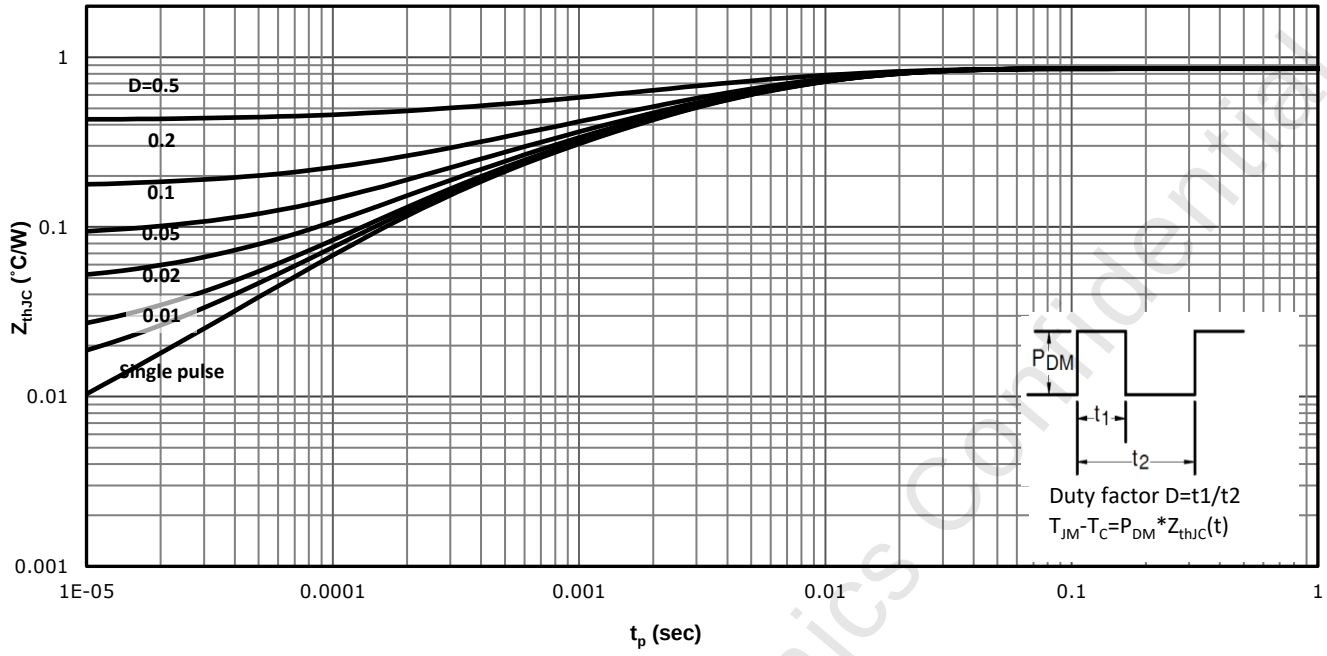
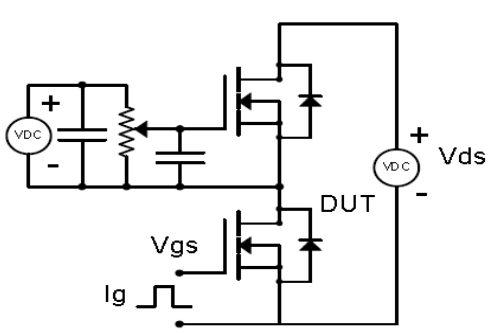


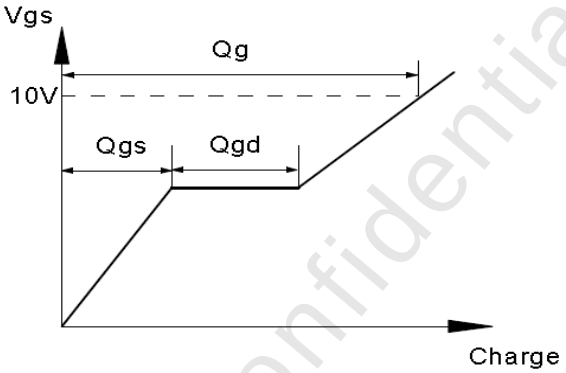
Fig 13: Max. Transient Thermal Impedance



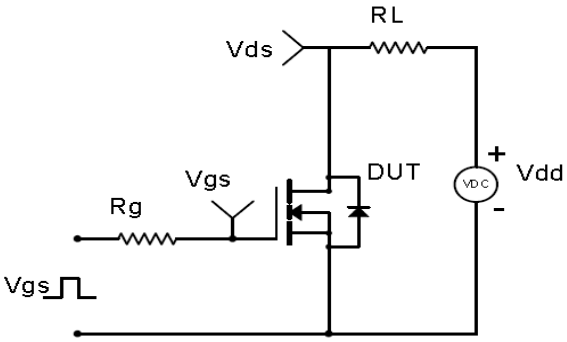
Test Circuit & Waveform

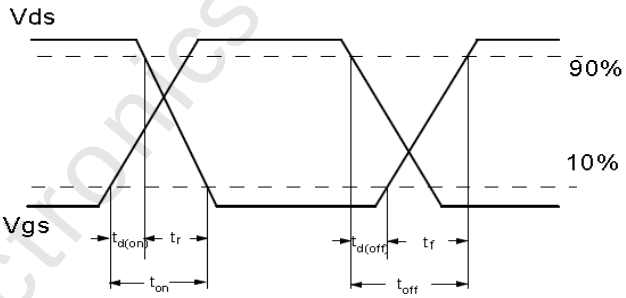
Gate Charge Test Circuit & Waveform



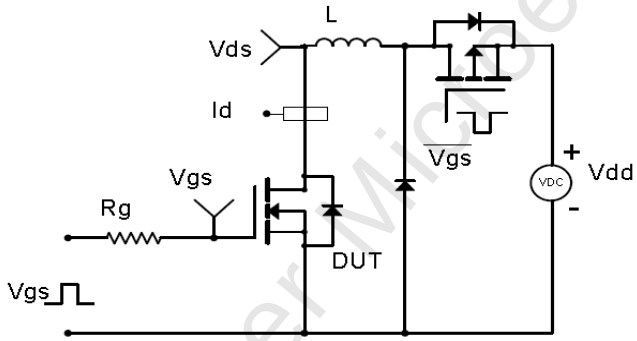


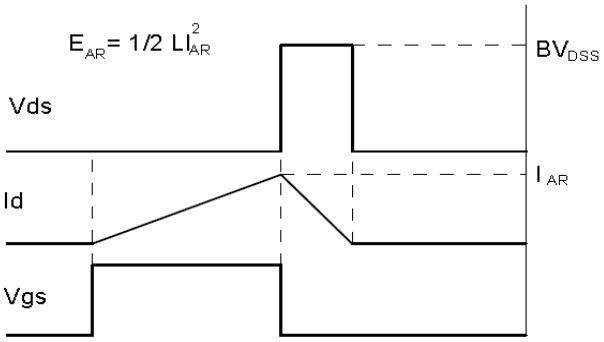
Resistive Switching Test Circuit & Waveforms



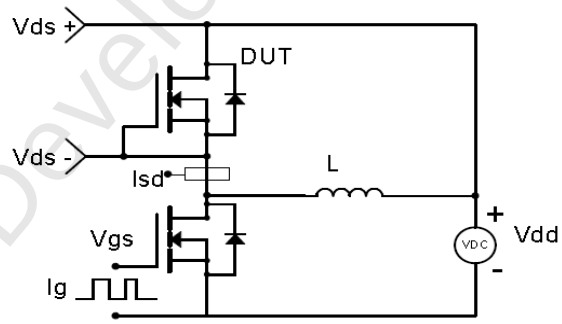


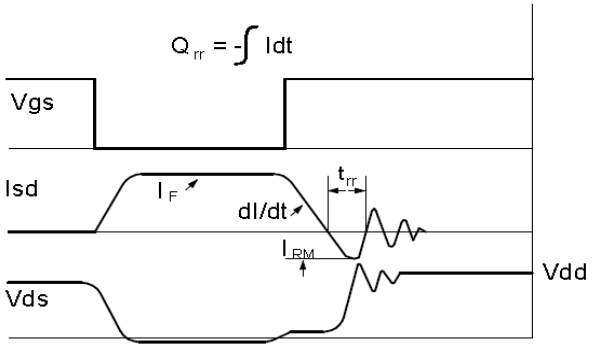
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



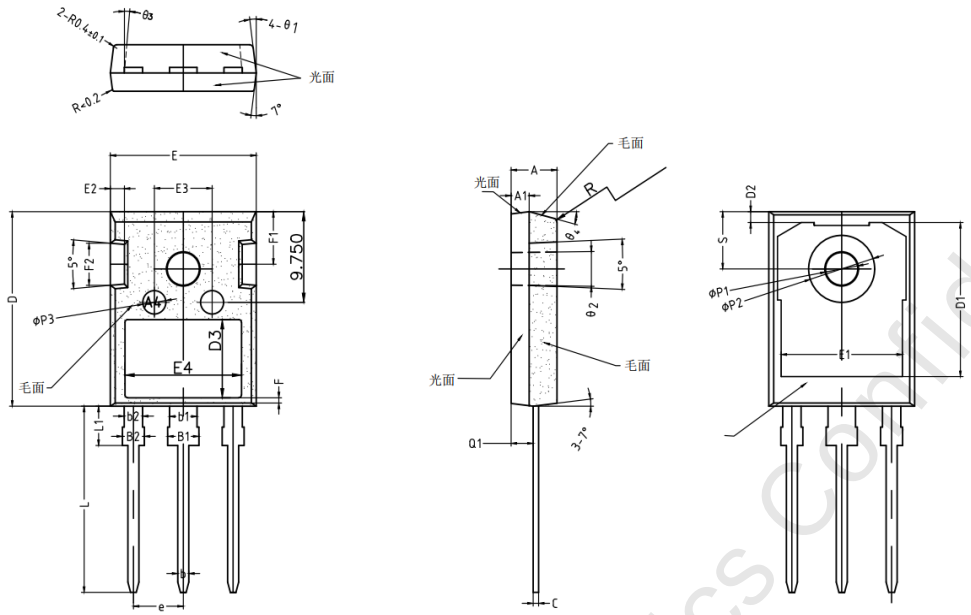


Diode Recovery Test Circuit & Waveforms



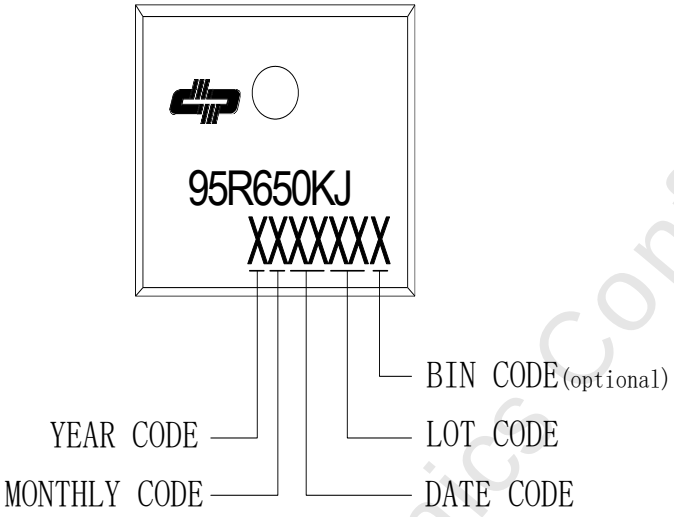


Package Outline: TO-247



Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	1.90	2.00	2.10
b	1.15	1.20	1.25
b1	2.95	3.00	3.05
b2	1.95	2.00	2.05
B1	3.00	3.10	3.20
B2	1.90	2.00	2.10
c	0.55	0.60	0.65
D	20.90	21.00	21.10
D1	16.45	16.55	16.65
D2	1.07	1.17	1.27
D3	8.15	8.20	8.25
E	15.70	15.80	15.90
E1	13.16	13.26	13.36
E2	2.40	2.50	2.60
E3	6.10	6.20	6.30
E4	12.70	12.80	12.90
F	0.75	0.85	0.95
F1	5.70	5.80	5.90
F2	4.90	5.00	5.10
F3	9.90	10.00	10.10
e		5.44 BSC	
L	19.72	19.92	20.12
L1	4.03	4.13	4.23
θ1	5°	7°	9°
θ2	1°	2°	3°
θ3	4°	5°	6°
θ4	13°	15°	17°
ΦP1	3.50	3.60	3.70
ΦP2	7.09	7.19	7.29
ΦP3	2.40	2.50	2.60
Q1	2.31	2.41	2.51
S	6.05	6.15	6.25
R	0.30	0.40	0.50

Part Marking Information



Revision History

Revison	Major changes
1.0	Release for formal version

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