HIGH DIODE

H019JN30C

RoHS COMPLIANT

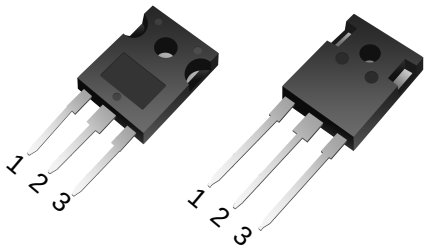
TO-247- Plastic-Encapsulate MOSFET

300V N-Channel COOLMOS

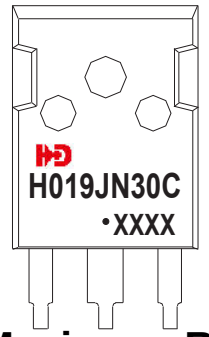
Features:

- ☐ Super Junction technology
- ☐ Much lower Ron*A Performance for On-state efficiency
- ☐ Better efficiency due to very low FOM
- ☐ Ultra Low Gate Charge:Qg=100nC (Typ.)
- ☐ VDSS=300V, ID=120A
- ☐ Rds(on):16mΩ(Typ.) @VG=10V
- ☐ 100% Avalanche Tested

TO-247S TO-247



Marking Diagram



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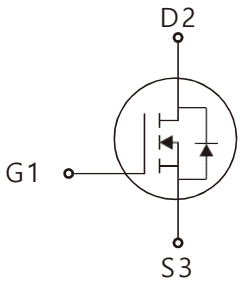


1.Gate (G)
2.Drain (D)
3.Source (S)

Maximum Ratings(T_A= 25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	300	V
Continuous drain current [1)] T_C = 25℃ T_C = 100℃	I_D	 120 60	A
Pulsed drain current [2)](T_C = 25℃, t_p limited by $T_{j,max}$)	$I_{D,pulse}$	240	A
Avalanche energy, single pulse (L=30mH)	E_{AS}	730	mJ
MOSFET dv/dt ruggedness	dv/dt	50	V/ns
Gate-Source voltage	V_{GS}	±30	V
Power dissipation (T_C = 25℃)	P_{tot}	374	W
Continuous diode forward current(T_C = 25℃)	I_S	80	A
Diode pulse current [2)] (T_C = 25℃)	$I_{S,pulse}$	240	A
Recovery diode dv/dt [3)]	dv/dt	20	V/ns
Operating junction and storage temperature	T_j , T_{stg}	-55...+150	℃

1) Limited by $T_{j,max}$. Maximum Duty Cycle D = 0.50

2) Pulse width t_p limited by $T_{j,max}$

3) Identical low side and high side switch with identical R_g

Thermal Characteristics

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Thermal resistance, junction – case	R_{thJC}	-	0.24	0.33	℃/W	
Thermal resistance, junction – ambient	R_{thJA}	-	-	43	℃/W	

Electrical Characteristic (at T_j = 25℃, unless otherwise specified)

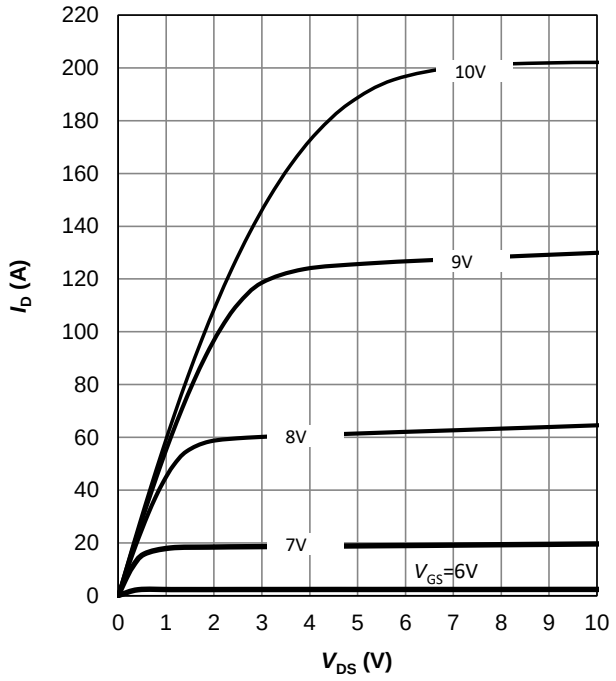
Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV_{DSS}	300	-	-	V	
Gate threshold voltage	$V_{GS(th)}$	3	-	5	V	V_{DS}=V_{GS},I_D=2mA
Zero gate voltage drain current	I_{DSS}	- -	- 150	10 -	μA	V_{DS}=300V,V_{GS}=0V T_j=25℃ T_j=125℃
Gate-source leakage current	I_{GSS}	-	-	±100	nA	V_{GS}=±30V,V_{DS}=0V
Drain-source on-state resistance	$R_{DS(on)}$	- -	16 36	19 -	mΩ	V_{GS}=10V,I_D=36A, T_j=25℃ T_j=150℃
Transconductance	g_{fs}	-	44	-	S	V_{DS}=10V,I_D=36A
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	4900	-	pF	V_{GS}=0V, V_{DS}=25V, f=1MHz
Output Capacitance	C_{oss}	-	3300	-		
Reverse Transfer Capacitance	C_{rss}	-	11	-		
Gate Total Charge	Q_g	-	100	-	nC	
Gate-Source charge	Q_{gs}	-	43	-		
Gate-Drain charge	Q_{gd}	-	39	-		
Gate plateau voltage	$V_{plateau}$	-	7.8	-	V	
Turn-on delay time	$t_{d(on)}$	-	36	-	ns	V_{GS}=10V, I_D=36A, V_{DS}=150V, R_g=5Ω
Rise time	t_r	-	94	-		
Turn-off delay time	$t_{d(off)}$	-	65	-		
	t_f	-	43	-		
Gate resistance	$R_{g,int}$	-	2.0	-	Ω	f=1MHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Body Diode Forward Voltage	V_{SD}	0.7	0.9	1.1	V	V_{GS}=0V,I_{SD}=36A
Body Diode Reverse Recovery Time	t_{rr}	-	100	-	ns	I_{SD}=36A di_F/dt=100A/μs V_{DS}=100V
Body Diode Reverse Recovery Charge	Q_{rr}	-	0.5	-	μC	
Body Diode Reverse Recovery Peak Current	I_{rrm}	-	9.5	-	A	

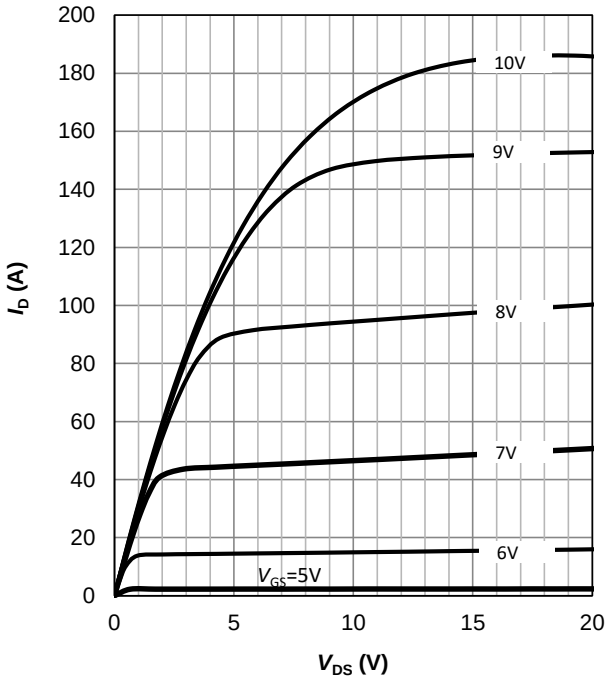
Typical Performance Characteristics

Fig 1. Output Characteristics (T_j=25℃)



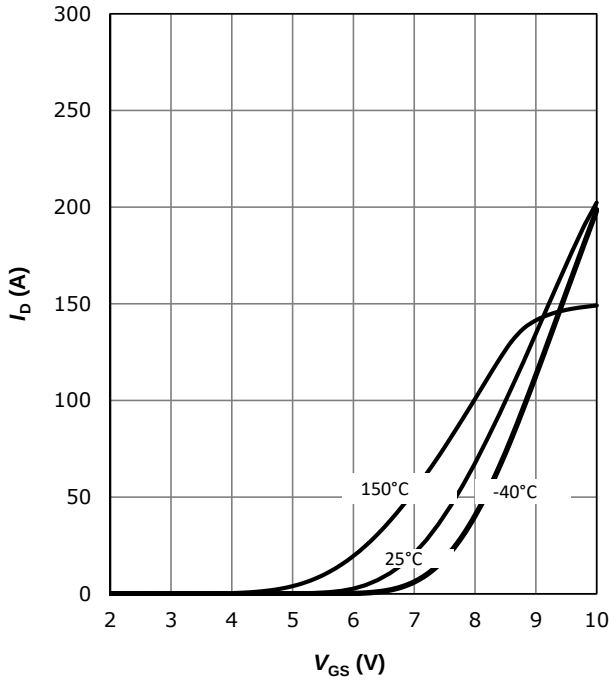
I_D=f(V_{DS});T_j=25℃;parameter:V_{GS}

Fig 2. Output Characteristics (T_j=125℃)



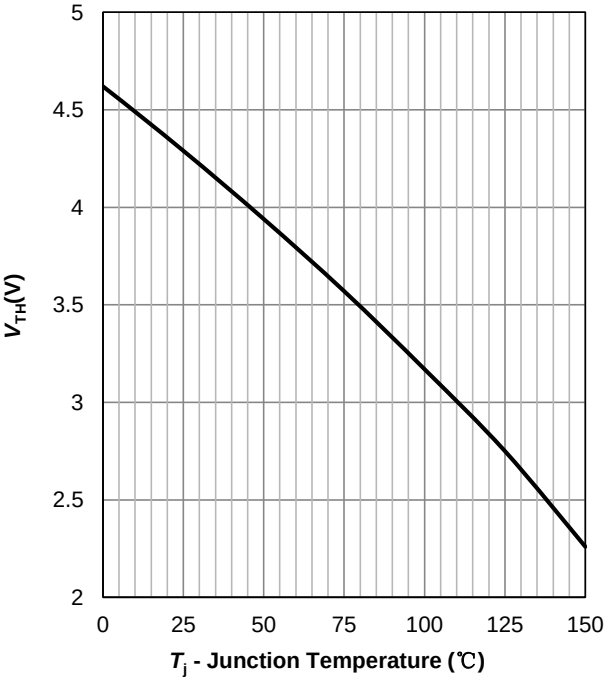
I_D=f(V_{DS});T_j=125℃;parameter:V_{GS}

Fig 3: Transfer Characteristics



I_D=f(V_{GS});V_{DS}=10V;parameter:T_j

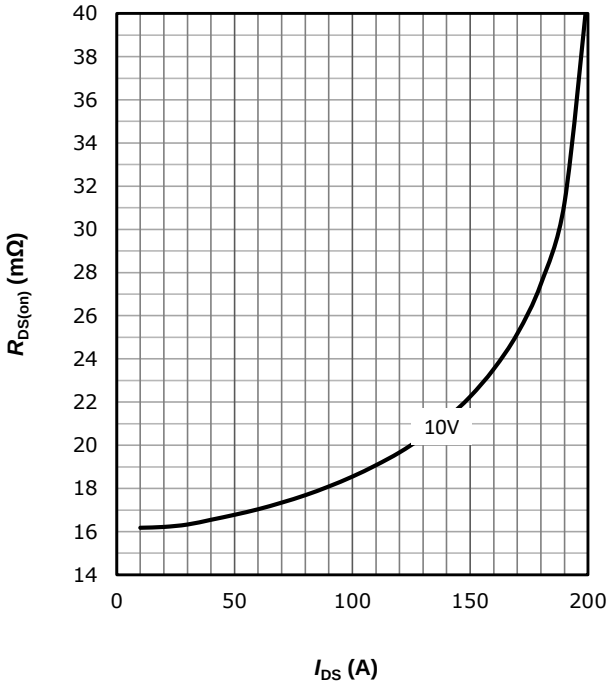
Fig 4: V_{TH} vs. T_j Temperature Characteristics



V_{TH}=f(T_j);I_D=2mA

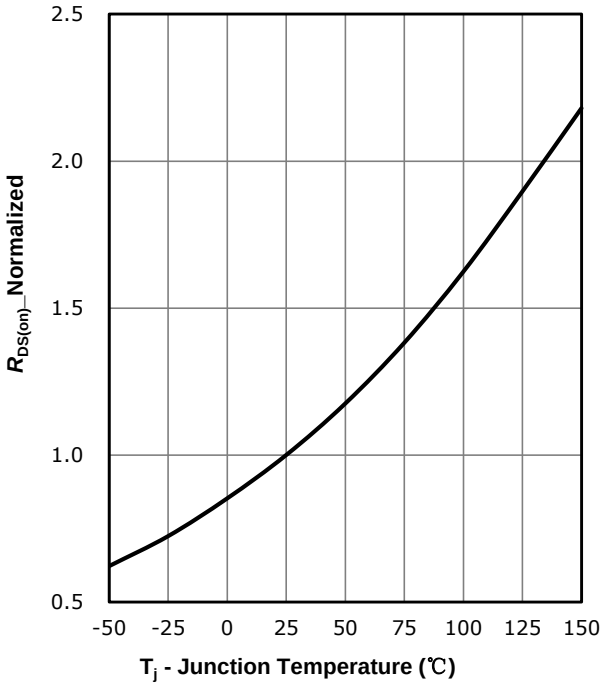
Typical Performance Characteristics

Fig 5: $R_{DS(on)}$ vs. I_{DS} Characteristics(T_j=25℃)



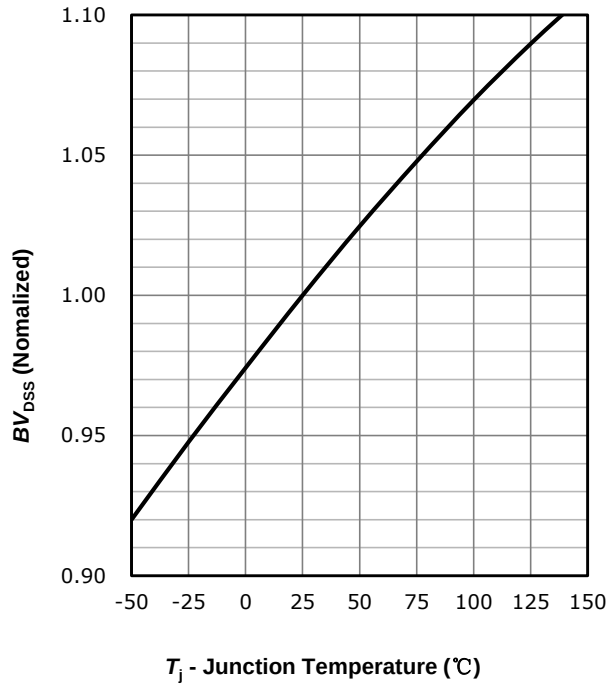
$R_{DS(on)}$=f(I_D);T_j=25℃;parameter:V_{GS}

Fig 6: $R_{DS(on)}$ vs. Temperature



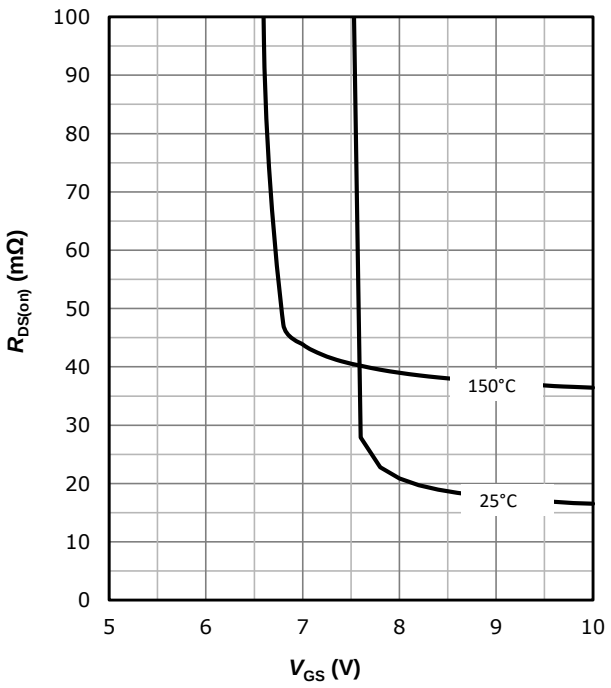
$R_{DS(on)}$=f(T_j);I_D=36A;V_{GS}=10V

Fig 7: BV_{DSS} vs. Temperature



BV_{DSS}=f(T_j)

Fig 8: $R_{DS(on)}$ vs. Gate Voltage

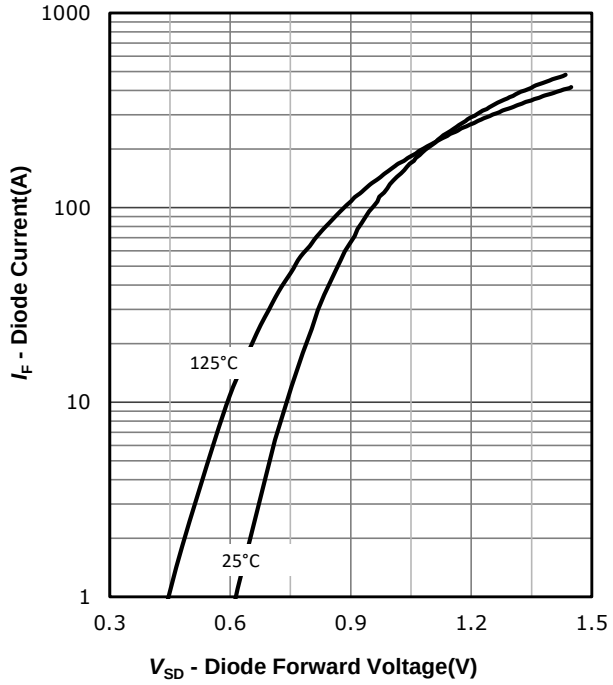


$R_{DS(on)}$=f(V_{GS});I_D=36A;parameter:T_j

Typical Performance Characteristics

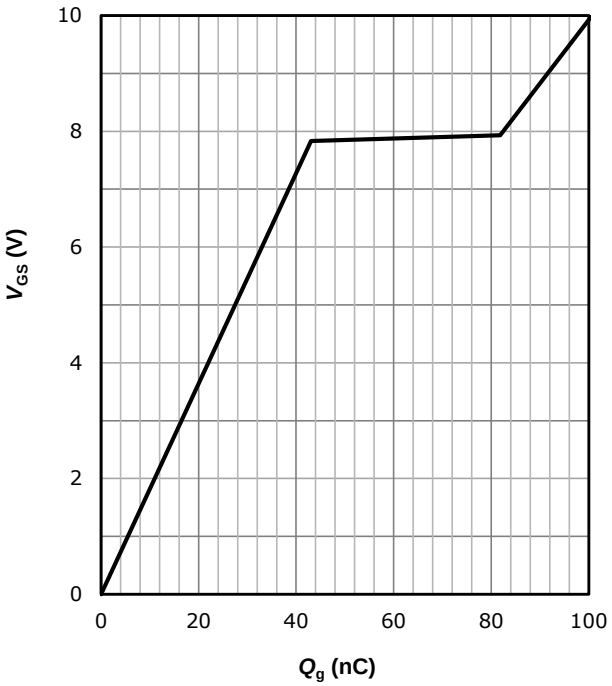
Typical Performance Characteristics

Fig 9: Body-diode Forward Characteristics



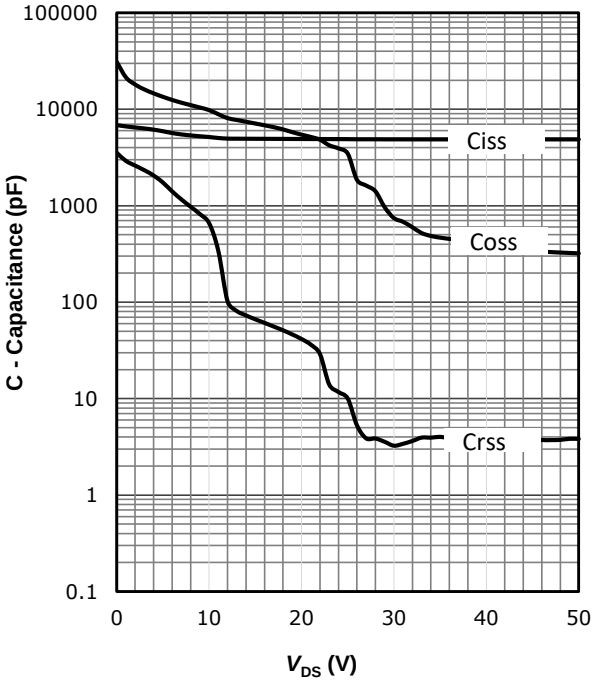
I_F=f(V_{SD});parameter:T_j

Fig 10: Gate Charge Characteristics



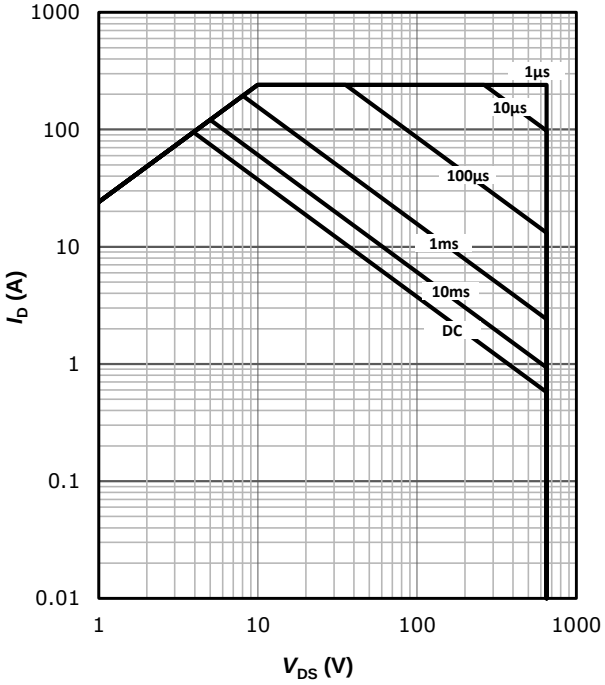
V_{GS}=f(Q_g);V_{DD}=150V;I_D=36A

Fig 11: Capacitance Characteristics



C=f(V_{DS});V_{GS}=0V;f=1MHZ

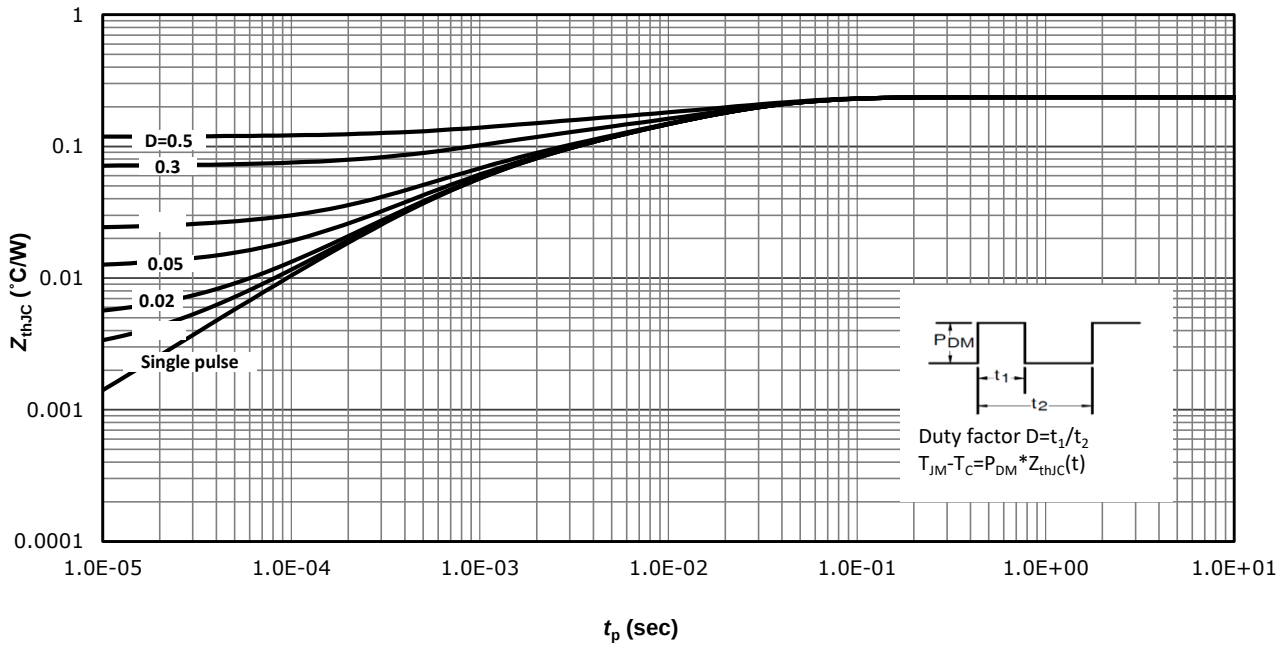
Fig 12: Safe Operating Area



I_D=f(V_{DS});T_C=25°C;D=0;parameter:t_p

Typical Performance Characteristics

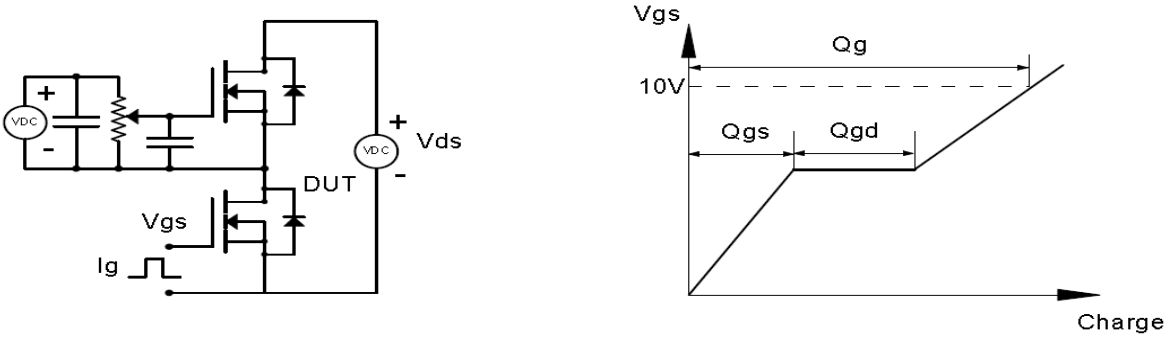
Fig 13: Max. Transient Thermal Impedance



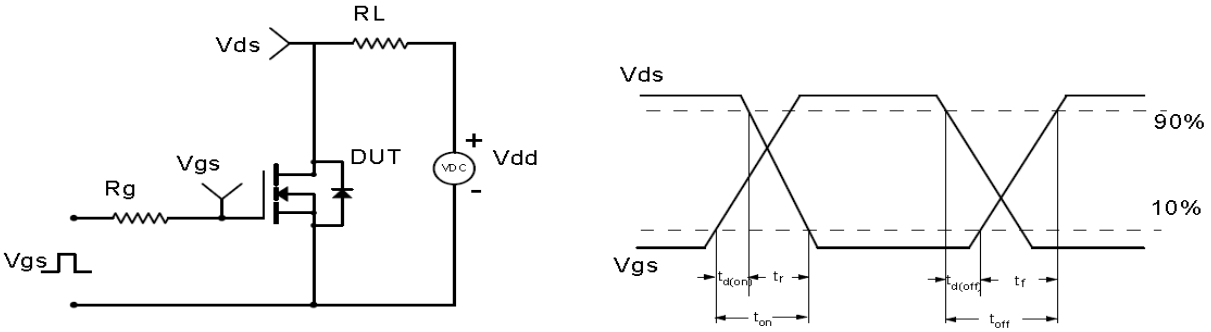
Z_{thJC}=f(t_p);parameter:D=t_1/t_2

TestTCircuitT&TWaveform

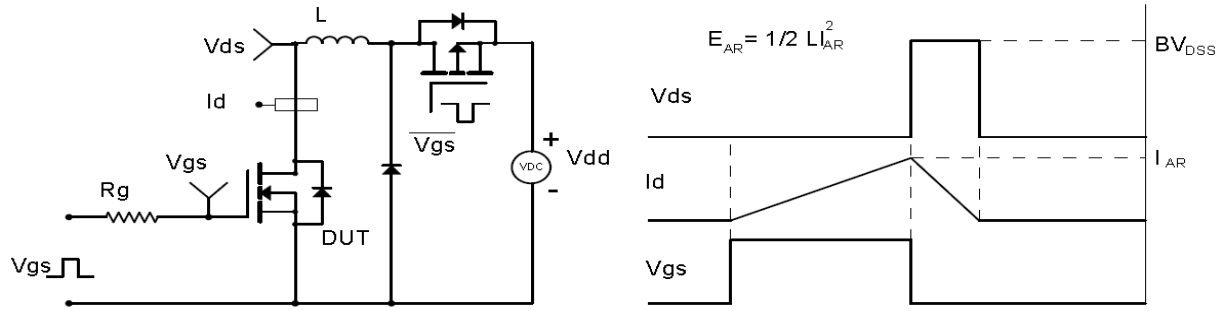
Gate Charge Test Circuit & Waveform



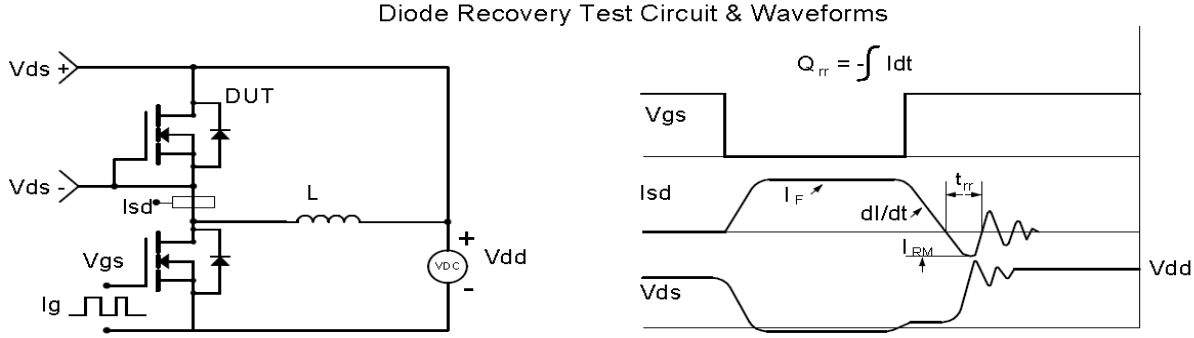
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

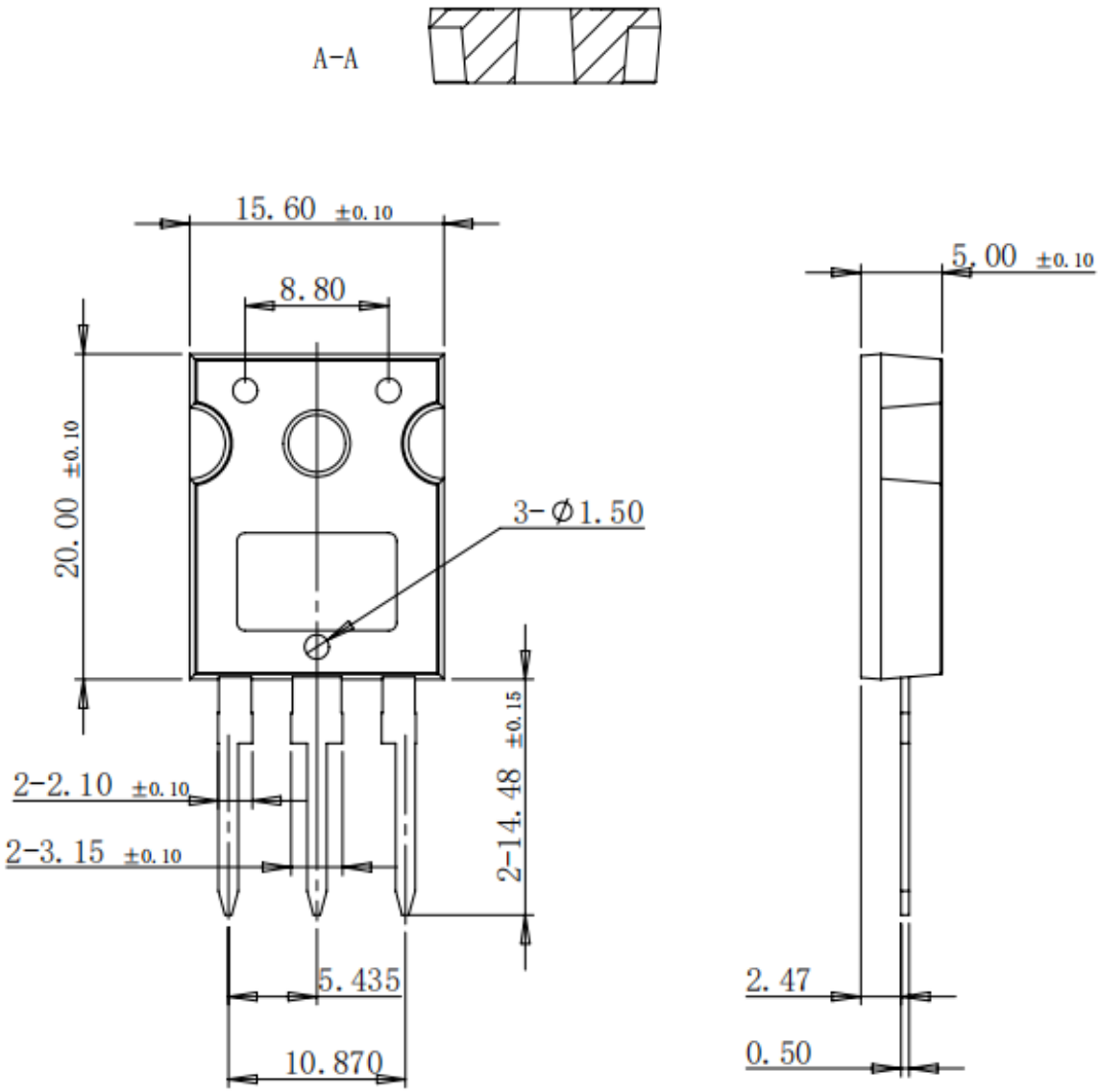


Diode Recovery Test Circuit & Waveforms



TO-247S

Unit: mm



Package Dimension

TO-247

Unit: mm