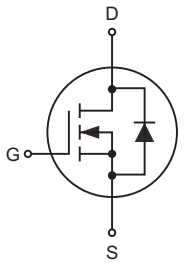
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RM185N150TL

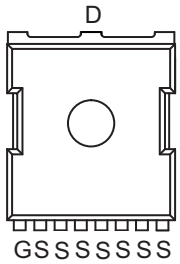
N-Channel Enhancement Mosfet

Features

- 150V,185A
  $R_{DS(ON)} < 4.3m\Omega @ V_{GS}=10V$ TYP: 3.8mΩ
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent RDS（ON）and Low Gate Charge



Symbol



Top View
TOLL-8L

Applications

- Motor control and drive
- Battery management System
- UPS
- Halogen-free

Package Marking and Ordering Information

Device Marking	Device	Device Package	Packaging Code	Reel Size	Quantity (PCS)
185N150	RM185N150TL	TOLL-8L	-W	13inch	2000

ABSOLUTE MAXIMUM RATINGS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (Tc=25℃) (1)	I_D	185	A
Continuous Drain Current (Tc=100℃)	I_D	117	A
Pulsed Drain Current (1)	I_{DM}	740	A
Drain Power Dissipation	P_D	255	W
Single Pulsed Avalanche Energy (2)	E_{AS}	1369	mJ
Thermal Resistance from Junction to Ambient (3)	$R_{\theta JA}$	62	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.49	℃/W
Junction Temperature	T_J	-55~ +150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

2025-03/59
REV:O

Notes:

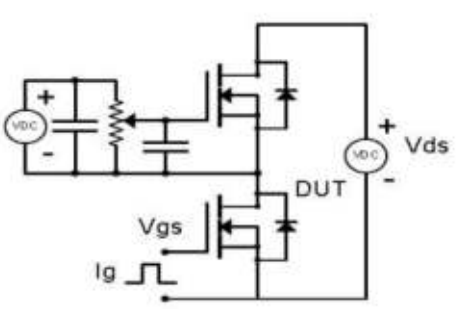
1) Repetitive Rating: pulse width limited by maximum junction temperature
2) EAS condition : T_J=25℃, V_{DD}=50V, V_G=10V, L=3mH, R_g=25Ω, I_{AS}=74A
3) The value of RθJA Mounted on FR4 Board（25.4mm*25.4mm*t1.6mm）With 2oz Copper TA=25℃

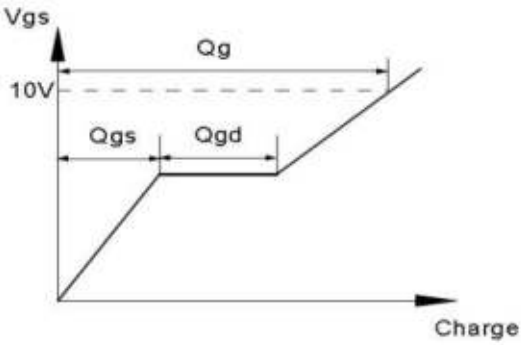
MOSFET ELECTRICAL CHARACTERISTICS(T_J=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	150	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =150V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0	3.0	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =90A	-	3.8	4.3	mΩ
Forward transconductance	R_g	V_{GS}= 0V, V_{DS}= 0V, f=1.0MHz	-	4.0	-	Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =75V, VGS=0V, f=1MHz	-	5007	-	pF
Output Capacitance	C_{oss}		-	809	-	
Reverse Transfer Capacitance	C_{rss}		-	23	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=75V, I_D=90A, R_G=2.7Ω, V_{GS}=10V	-	22	-	ns
Turn-on rise time	t_r		-	60	-	
Turn-off delay time	$t_{d(off)}$		-	58	-	
Turn-off fall time	t_f		-	28	-	
Total Gate Charge	Qg	V_{DS}=75V, I_D=90A, V_{GS}=10V	-	75	-	nC
Gate-Source Charge	Qgs		-	30	-	
Gate-Drain Charge	Qgd		-	17	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=90A	-	0.85	1.4	V
Diode Forward current	I_S	T_C=25℃	-	-	600	A
Body Diode Reverse Recovery Time	trr	T_J=25℃, I_F=90A,di/dt=100A/us	-	99	-	ns
Body Diode Reverse Recovery Charge	Qrr		-	323	-	nC

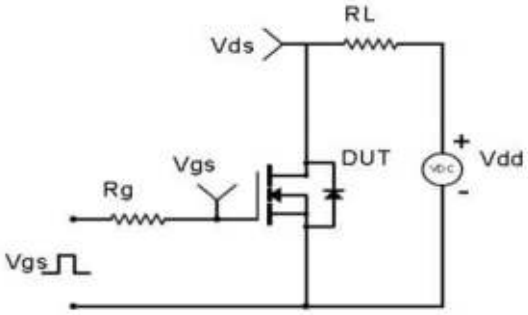
Test Circuit & Waveform

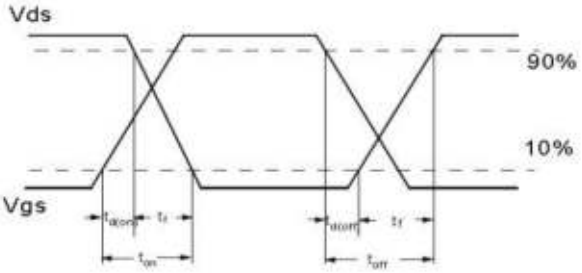
Gate Charge Test Circuit & Waveform



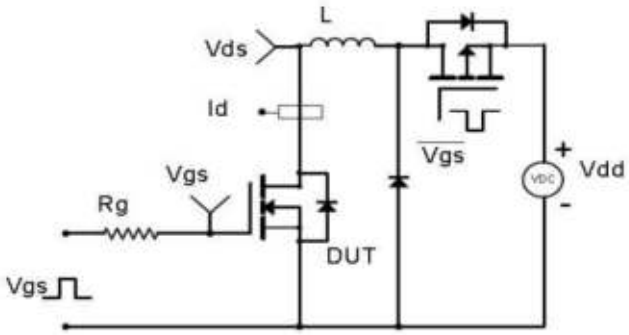


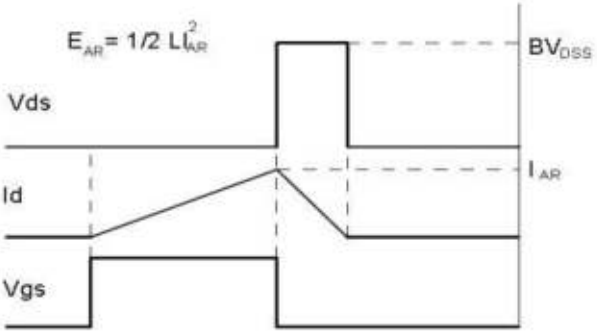
Resistive Switching Test Circuit & Waveforms



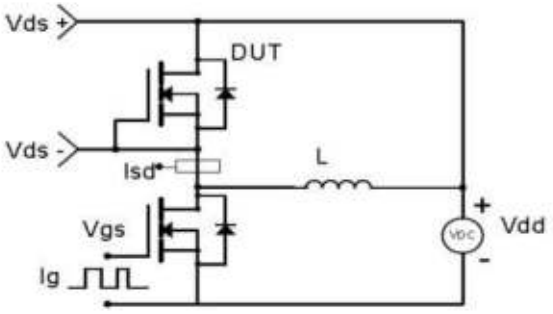


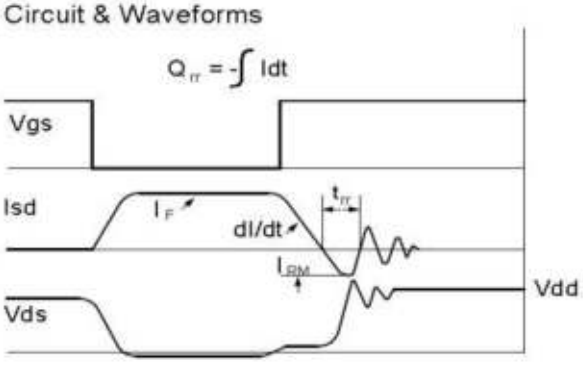
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms





RATING AND CHARACTERISTICS CURVES (RM185N150TL)

Fig 1: Output Characteristics

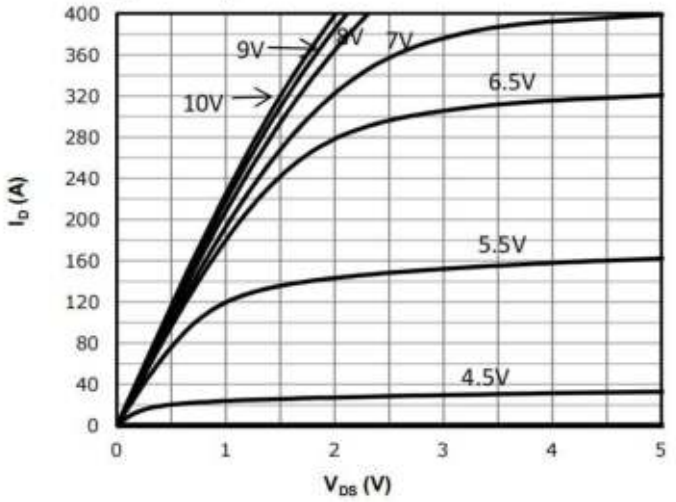


Fig 2: Transfer Characteristics

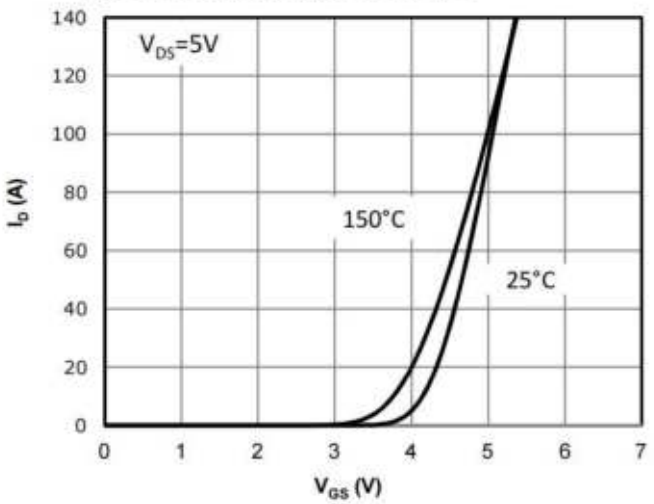


Fig 3: Rds(on) vs Drain Current and Gate Voltage

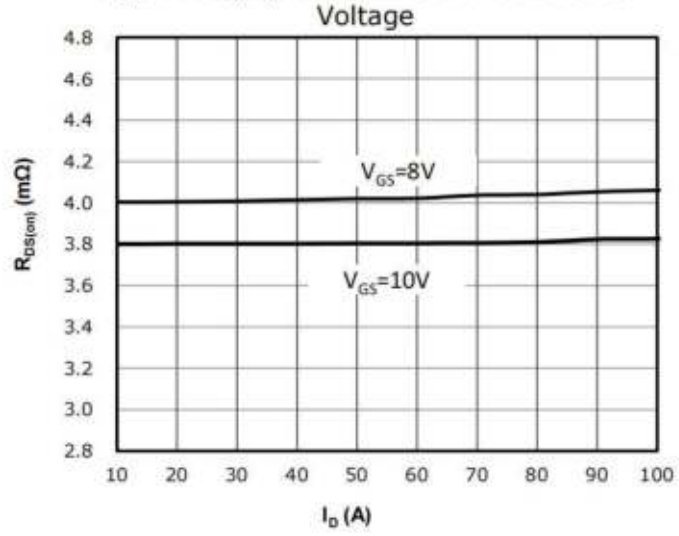


Fig 4: Rds(on) vs Gate Voltage

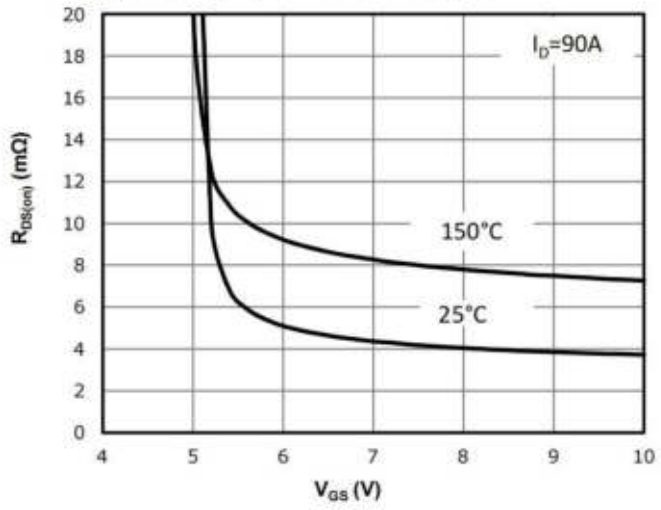


Fig 5: Rds(on) vs. Temperature

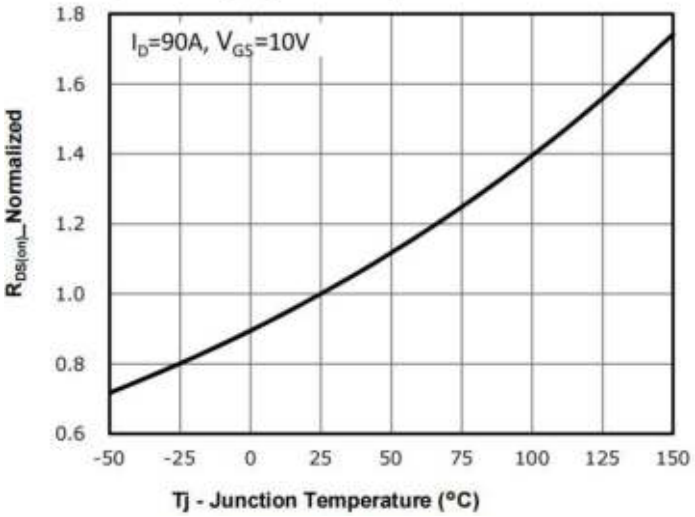
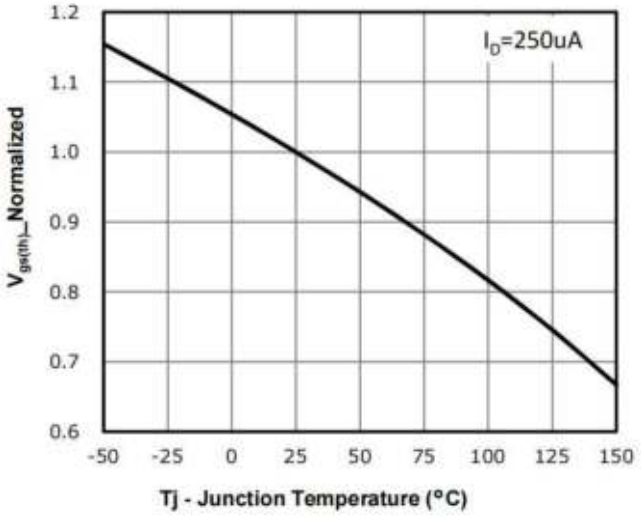


Fig 6: Vgs(th) vs. Temperature



RATING AND CHARACTERISTICS CURVES (RM185N150TL)

Fig 7: BVdss vs. Temperature

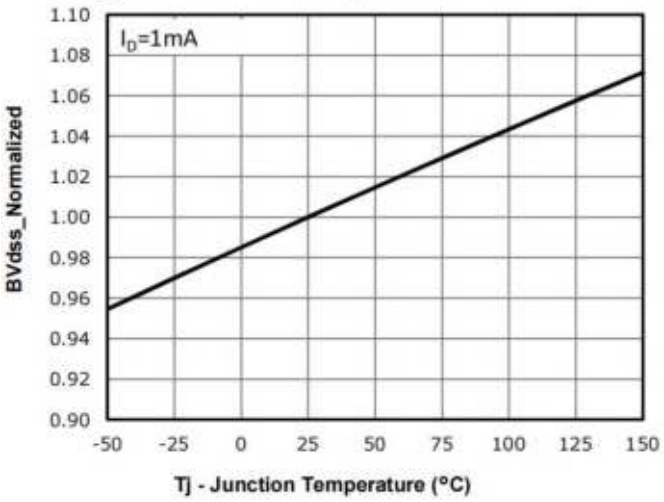


Fig 8: Capacitance Characteristics

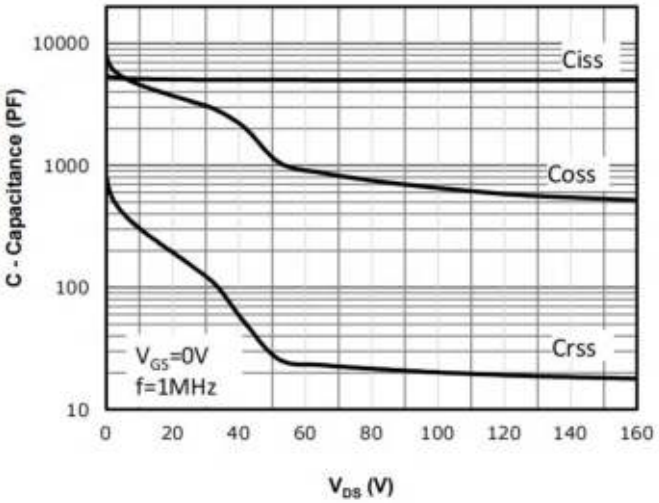


Fig 9: Gate Charge Characteristics

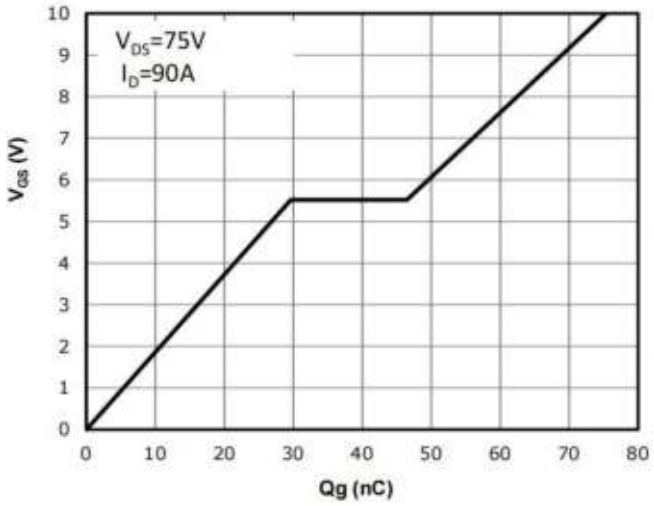


Fig 10: Body-diode Forward Characteristics

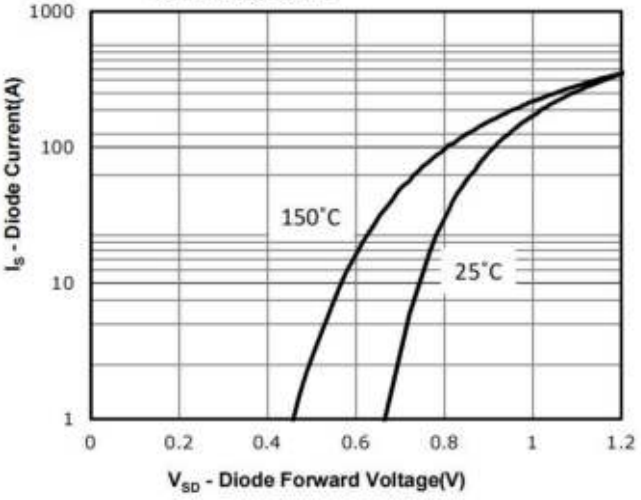


Fig 11: Power Dissipation

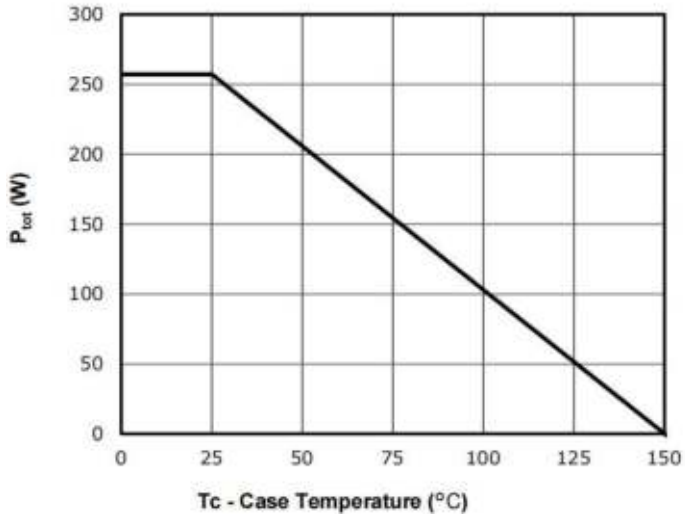
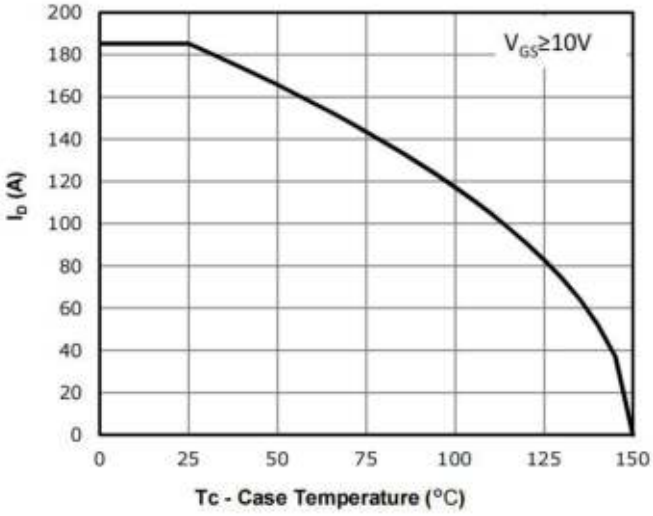


Fig 12: Drain Current Derating



RATING AND CHARACTERISTICS CURVES (RM185N150TL)

Fig 13: Safe Operating Area

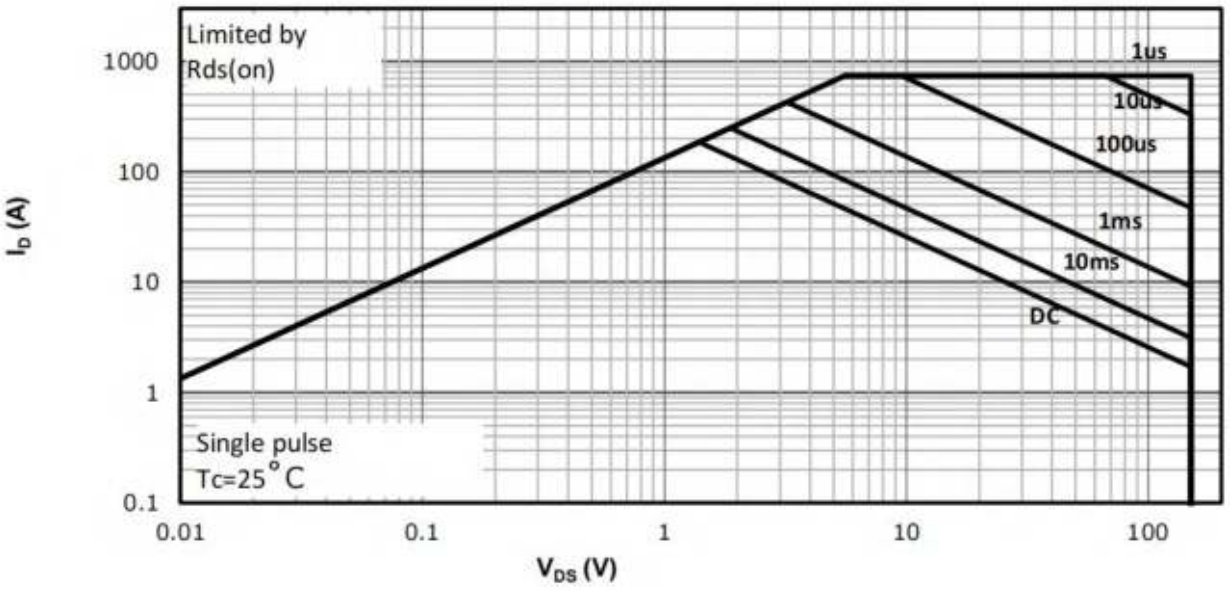
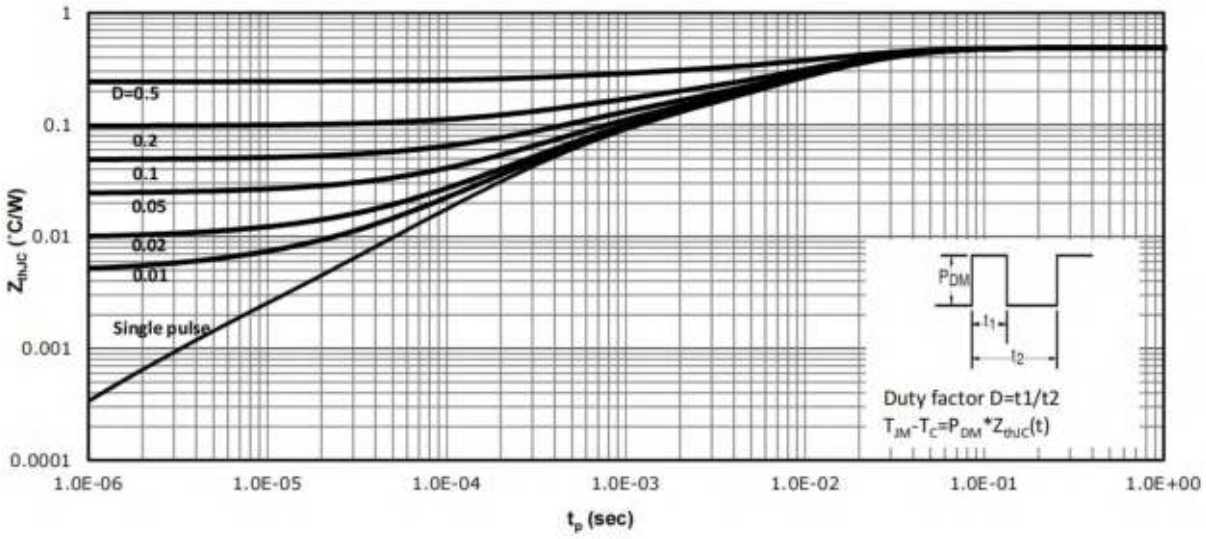


Fig 14: Max. Transient Thermal Impedance



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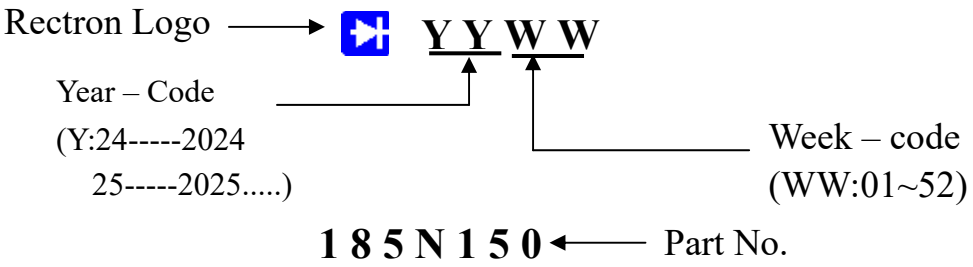
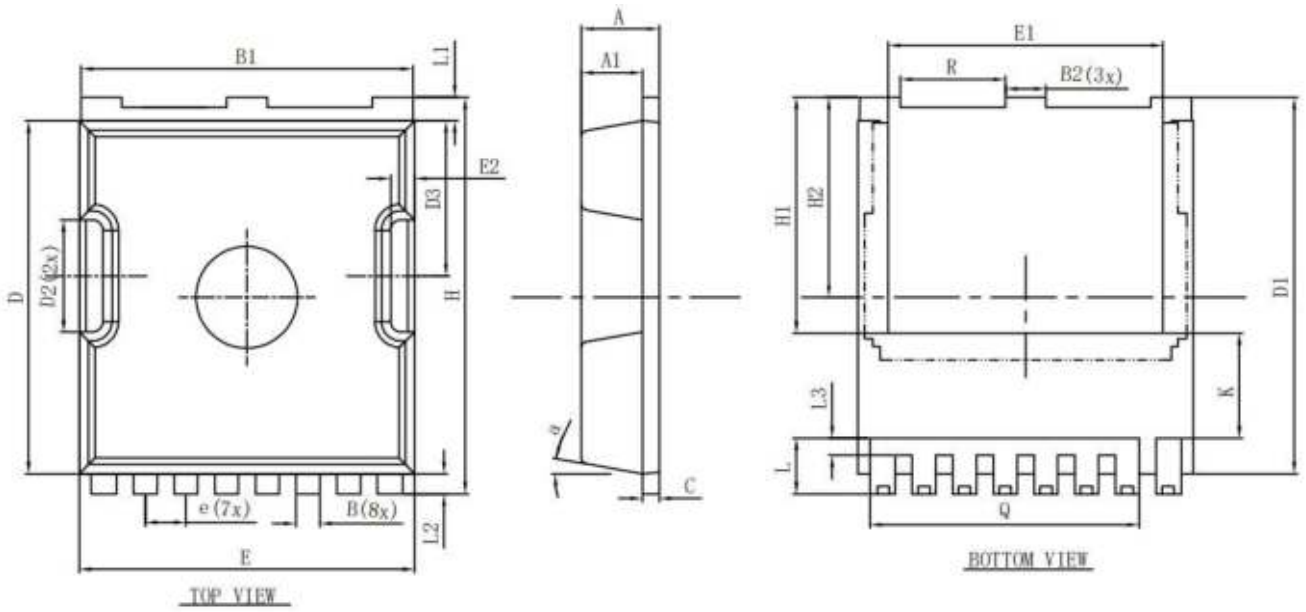
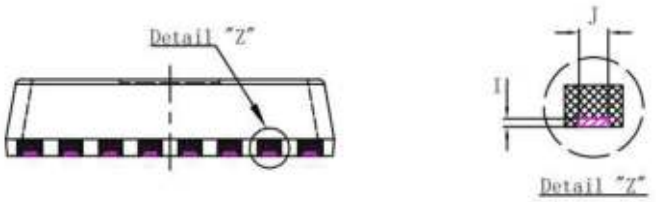
Marking on the body



TOLL-8L Package Information





SYMBOL	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.200	2.300	2.400
A1	1.700	1.800	1.900
B	0.700	0.800	0.900
B1	9.700	9.800	9.900
B2	1.100	1.200	1.300
C	0.400	0.500	0.600
D	10.300	10.400	10.500
D1	11.000	11.100	11.200
D2	3.200	3.300	3.400
D3	4.470	4.570	4.670
E	9.800	9.900	10.000
E1	8.000	8.100	8.200
E2	0.500	0.600	0.700
e	1.200 BSC		
H	11.600	11.700	11.800
H1	6.950 BSC		
H2	5.900 BSC		
I	0.050	0.100	0.15
J	0.350 REF.		
K	3.100 REF.		
L	1.550	1.650	1.750
L1	0.600	0.700	0.800
L2	0.500	0.600	0.700
L3	0.400	0.500	0.600
Q	8.000 REF.		
R	3.000	3.100	3.200
a	10° REF.		

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