

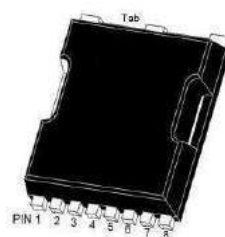
Features

- Uses MOT advanced double trench technology
- Low On-Resistance ($R_{DS(on)} \leq 11.5m\Omega$)
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% avalanche tested
- Pb-free plating; RoHS compliant

Applications

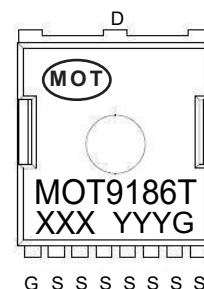
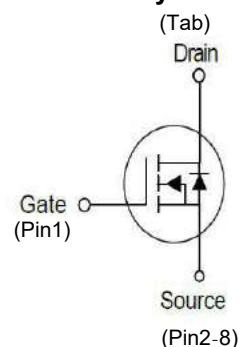
- Battery management
- Motor control and drive
- Synchronous rectification
- Switching applications

Pin configuration (Top view)



TOLL-8

Symbol



G S S S S S S S
XXX=Lot Number
YYY=Year Week
G=Vth Range

Marking

Key Performance Parameters

Parameter	Value	Unit
V_{DS}	200	V
$R_{DS(on),typ.}$	9.5	mΩ
I_D	100	A

Ordering information

Type/Ordering Code	Package	Marking	Packing&Qty.(pcs)
MOT9186T	TOLL-8	MOT9186T	2000/Reel

■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limited	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	100	A
Drain Current-Continuous($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	80	A
Pulsed Drain Current	I_{DM}	400	A
Maximum Power Dissipation	P_D	328	W
Derating factor		2.67	W/ $^{\circ}\text{C}$
Single pulse avalanche energy	E_{AS}	1016	mJ
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.38	$^{\circ}\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	200	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =200V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	9.5	11.5	mΩ
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =50A	20	-	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =25 V, V _{GS} =0V, F=1.0MHz	-	10900	-	PF
Output Capacitance	C _{oss}		-	2300	-	PF
Reverse Transfer Capacitance	C _{rss}		-	1300	-	PF
Switching characteristics						
Turn on Delay Time	t _{d(on)}	V _{DD} =100V, I _D =50A V _{GS} =10V, R _G =4.7Ω	-	18	-	nS
Turn-on Rise Time	t _r		-	26	-	nS
Turn-Off Delay Time	t _{d(off)}		-	41	-	nS
Turn-Off Fall Time	t _f	V _{DS} =100V, I _D =50A, V _{GS} =10V	-	11	-	nS
Total Gate Charge	Q _g		-	87	-	nC
Gate-Source Charge	Q _{gs}		-	32	-	nC
Gate-Drain Charge	Q _{gd}		-	17.5	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =100A	-	-	1.2	V
Diode Forward Current	I _S		-	-	100	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 50A	-	140	-	nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs	-	600	-	nC

■ TYPICAL CHARACTERISTICS

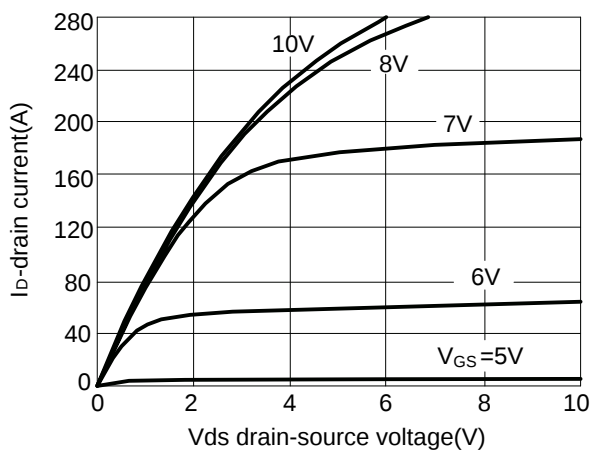


Figure 1: Output characteristics

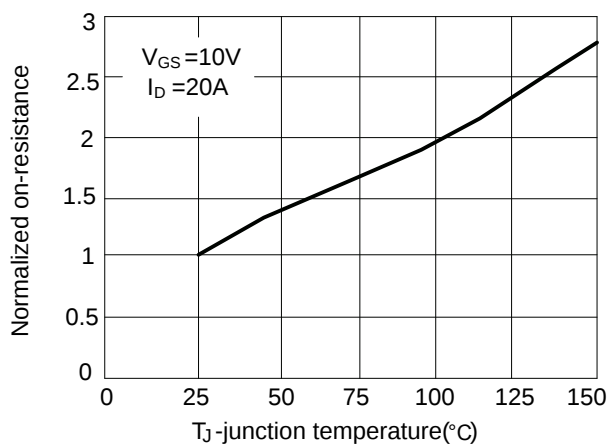


Figure 2: Rdson-junction temperature

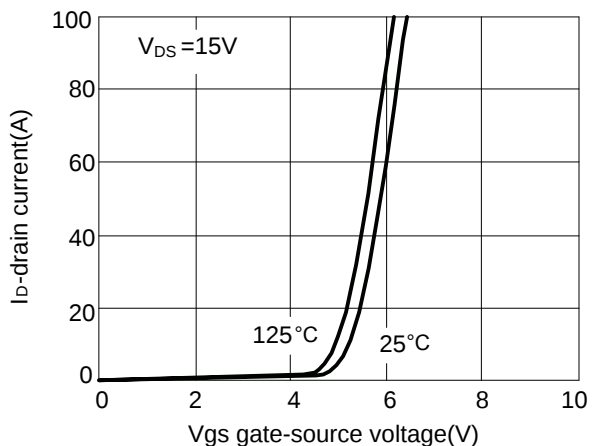


Figure 3: Transfer characteristics

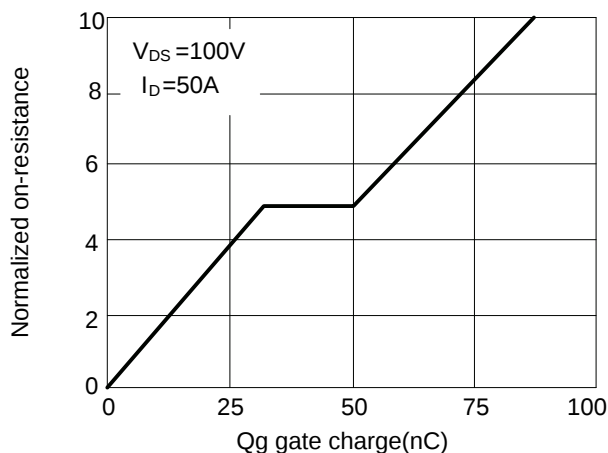


Figure 4: gate charge

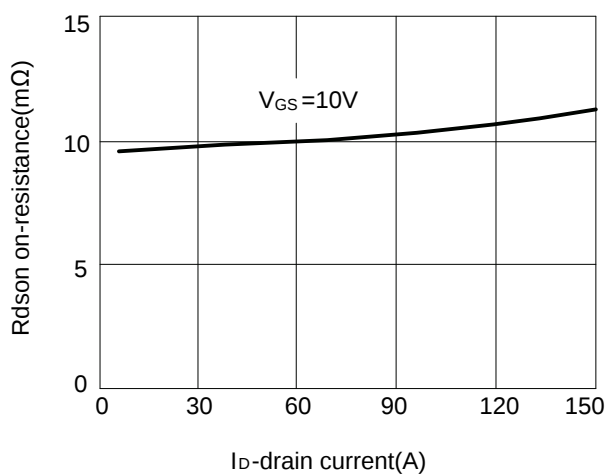


Figure 5: Rdson-drain current

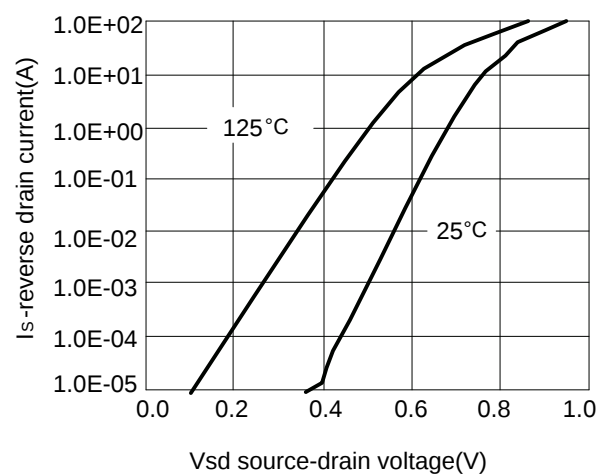


Figure 6: Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

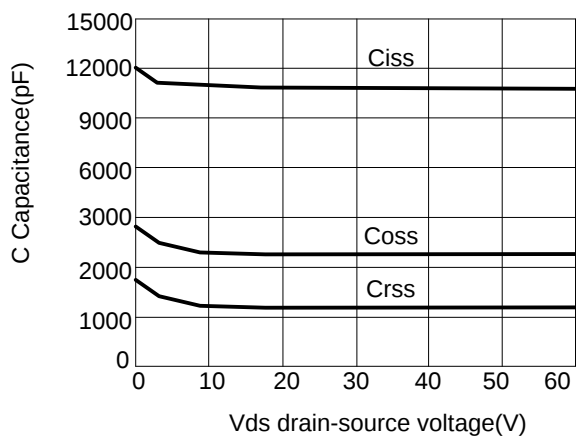


Figure 7: Capacitance vs vds

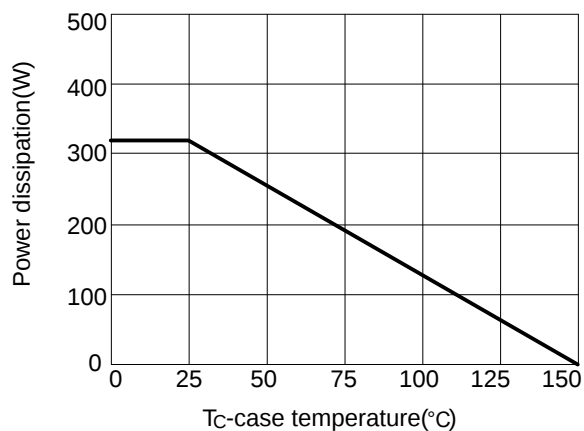


Figure 8: Power de-rating

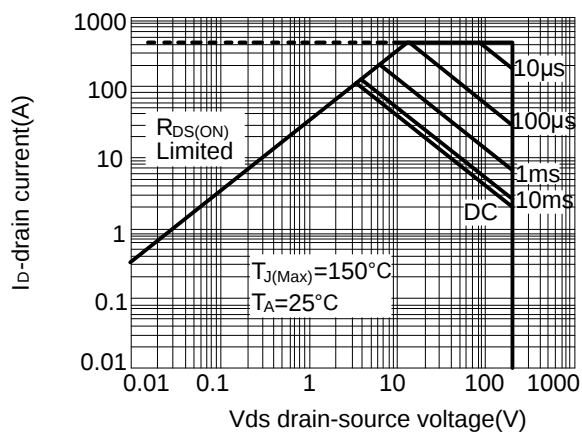


Figure 9: Safe operation area

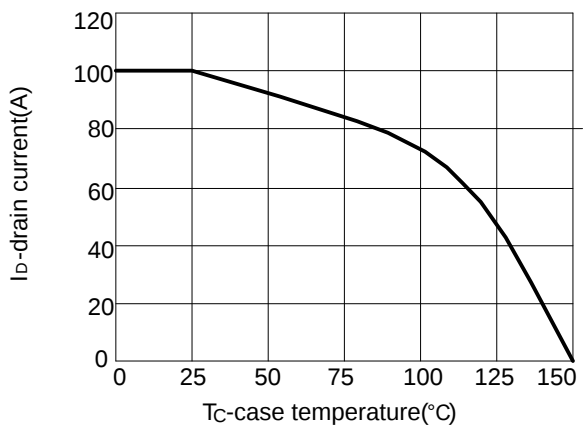
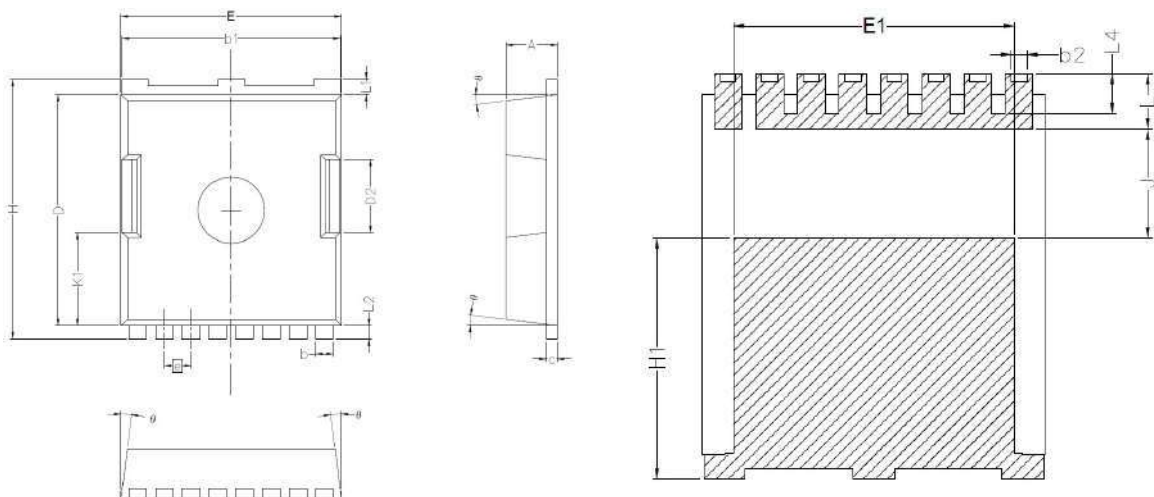


Figure 10: Current de-ratings

■ TOLL-8L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimesions In Millimeters	
	Min.	Max.
A	2.20	2.40
b	0.70	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20BSC	
H	11.48	11.88
H1	6.75	7.15
N	8	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L4	1.00	1.30
θ	4°	10°

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