

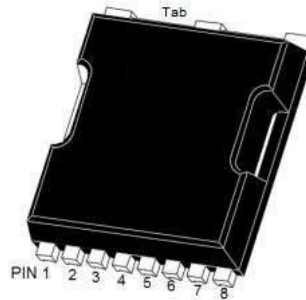
Features

- Uses MOT advanced double trench technology
- Low On-Resistance ($R_{DS(on)} \leq 4.0m\Omega$)
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% avalanche tested
- Pb-free plating; RoHS compliant

Applications

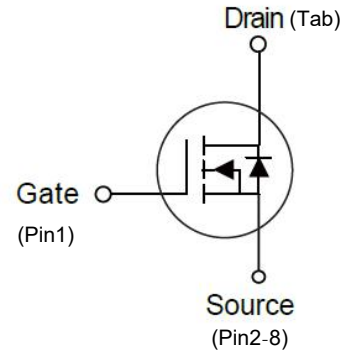
- Battery management
- Motor control and drive
- Synchronous rectification
- Switching applications

Pin configuration (Top view)



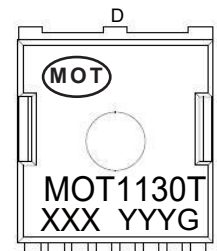
TOLL-8

Symbol



Key Performance Parameters

Parameter	Value	Unit
V_{DS}	100	V
$R_{DS(on),typ.}$	3.0	mΩ
I_D	176	A



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

Marking

Ordering information

Type/Ordering Code	Package	Marking	Packing&Qty.(pcs)
MOT1130T	TOLL-8	MOT1130T	2000/Reel

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

Parameter	Symbol	Max	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	176	A
Drain Current-Continuous($T_C=100^{\circ}\text{C}$)	I_D	124	A
Pulsed Drain Current	I_{DM}	704	A
Maximum Power Dissipation	P_D	263	W
Derating factor		1.73	W/ $^{\circ}\text{C}$
Single Pulsed Avalanche Energy	E_{AS}	1200	mJ
Operating Junction and Storage temperature	T_J, T_{STG}	-55 to 175	$^{\circ}\text{C}$
Thermal Resistance- Junction to Case	$R_{\theta JC}$	0.57	$^{\circ}\text{C/W}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _{DS} = 250 μA	100	-	-	V
Drain Leakage Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V	-	-	1	μA
Gate Leakage Current	I _{GSS}	V _{GS} = 0 V, V _{GS} = ± 20 V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	V
On-State Resistance	R _{DS(ON)}	V _{GS} = 10 V, I _{DS} = 50 A	-	3.0	4.0	mΩ
Forward Transconductance	g _{FS}	V _{DS} = 10 V, I _{DS} = 80 A	30	-	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 50 V Frequency = 1 MHz	-	7500	-	pF
Output Capacitance	C _{oss}		-	755	-	pF
Reverse Transfer Capacitance	C _{rss}		-	45	-	pF
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} = 50 V, V _{GS} = 10 V, I _D = 80 A, R _G = 4.7 Ω	-	20	-	nS
Turn-on Rise Time	t _r		-	78	-	nS
Turn-off Delay Time	t _{d(off)}		-	50	-	nS
Turn-off Fall Time	t _f		-	16	-	nS
Total Gate Charge	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _{DS} = 80 A	-	100	-	nC
Gate-Source Charge	Q _{gs}		-	43.4	-	nC
Gate-Drain Charge	Q _{gd}		-	19.7	-	nC
Drain-source diode Characteristics						
Diode Forward Voltage	V _{SD}	I _{SD} =160 A, V _{GS} = 0 V	-	-	1.2	V
Diode Forward Current	I _S		-	-	176	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = I _S	-	65	-	nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs	-	97	-	nC

■ TYPICAL CHARACTERISTICS

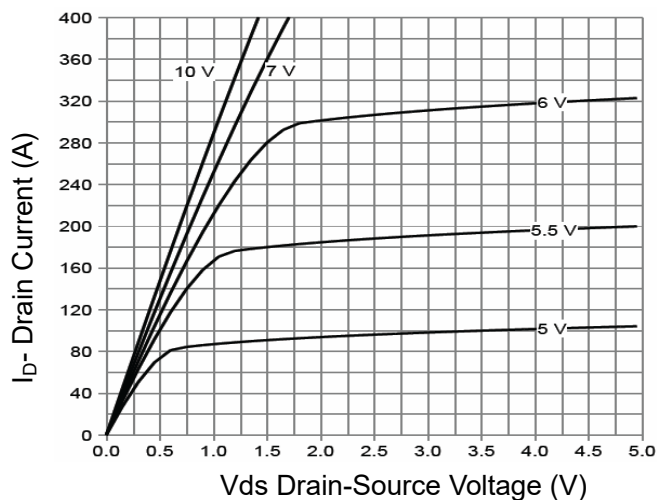


Figure1 output characteristics

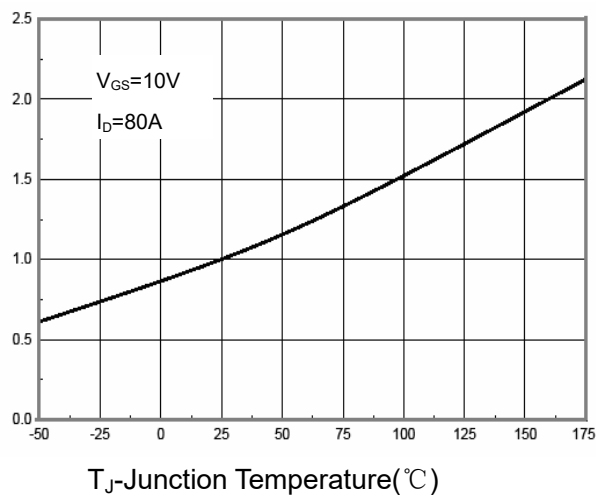


Figure2 Normalized $R_{DS(on)}$ -junction temperature

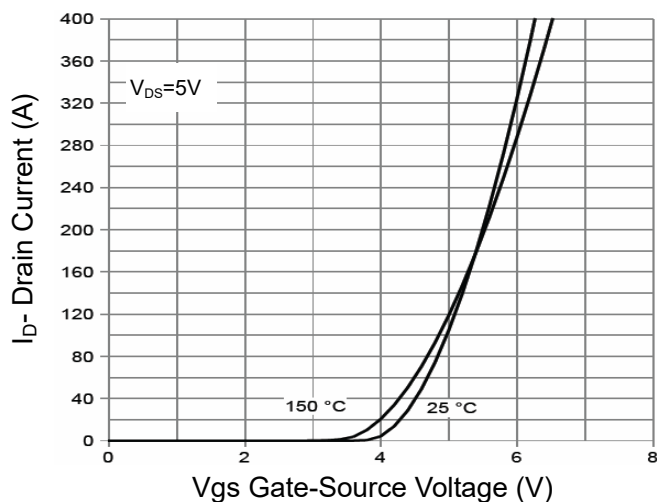


Figure3 transfer characteristics

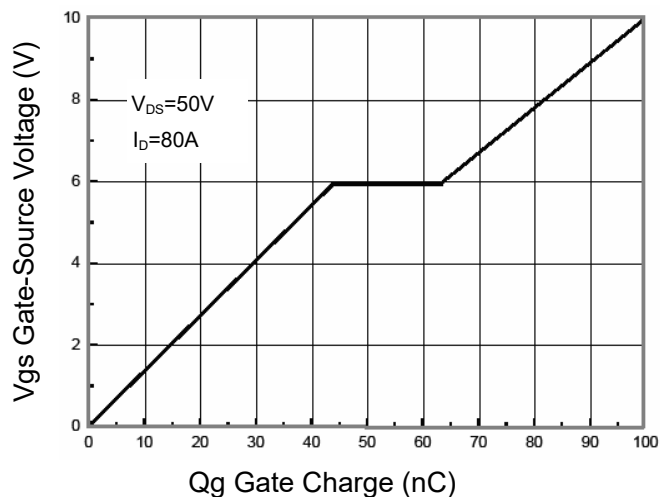


Figure4 gate charge

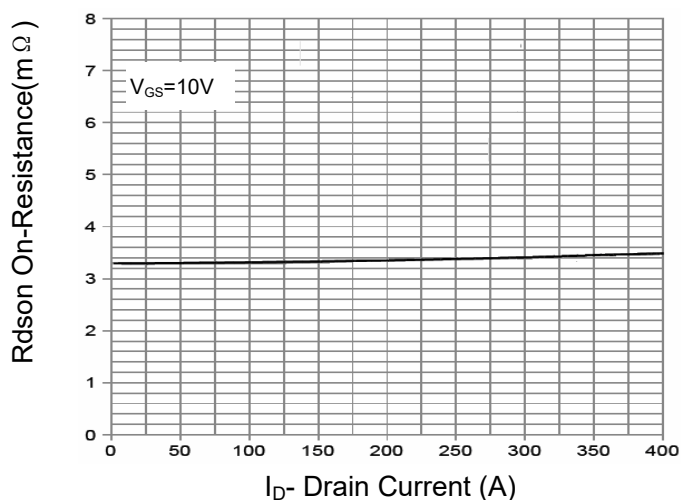


Figure5 $R_{DS(on)}$ -Drain current

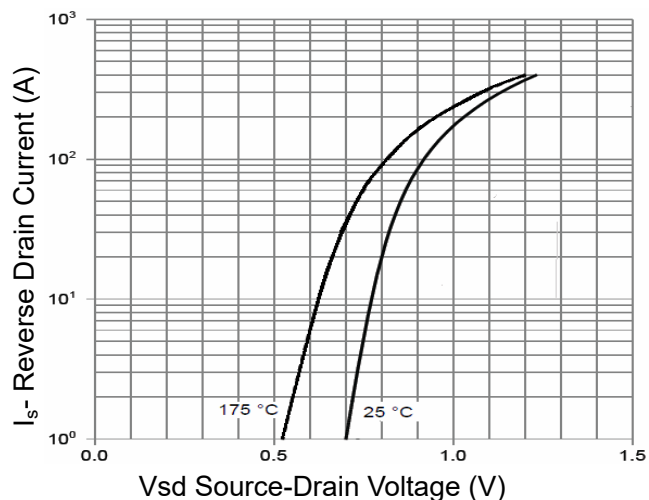


Figure6 Source-Drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

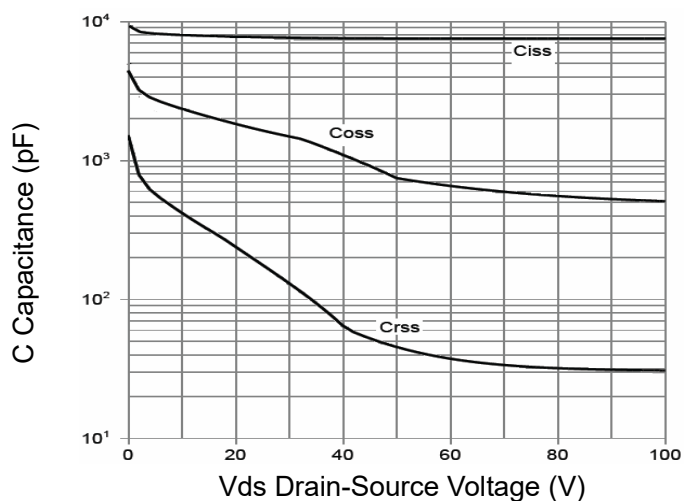


Figure7 capacitance vs vds

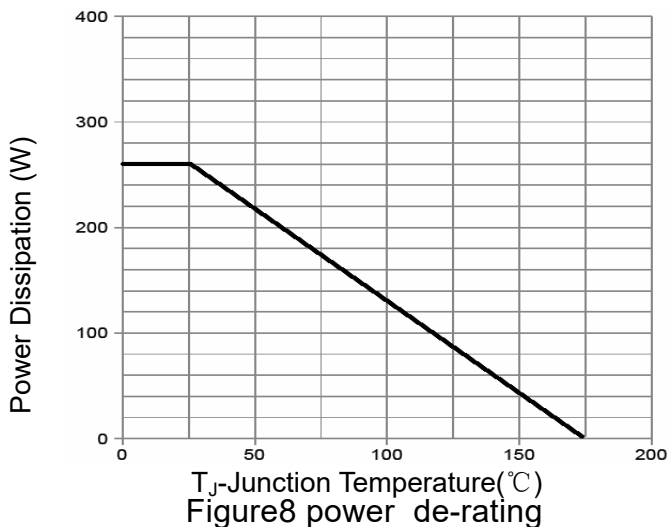


Figure8 power de-rating

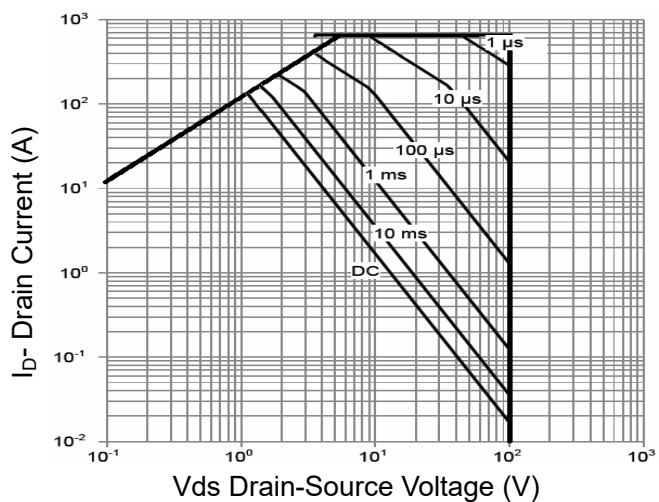


Figure9 safe operation area

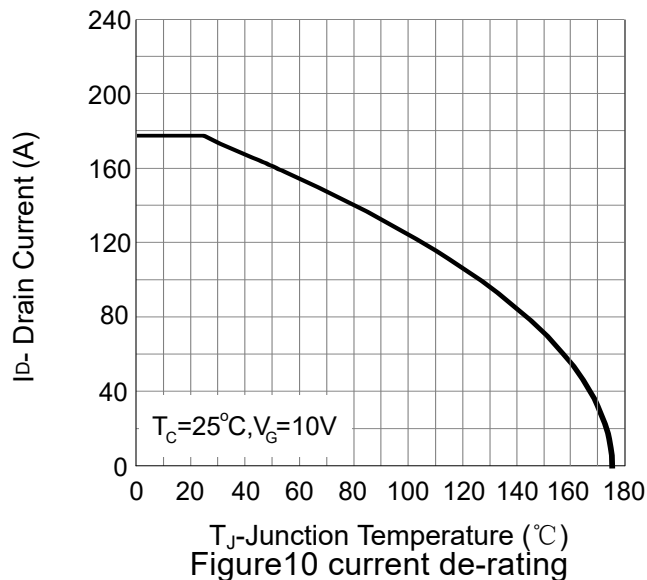


Figure10 current de-rating

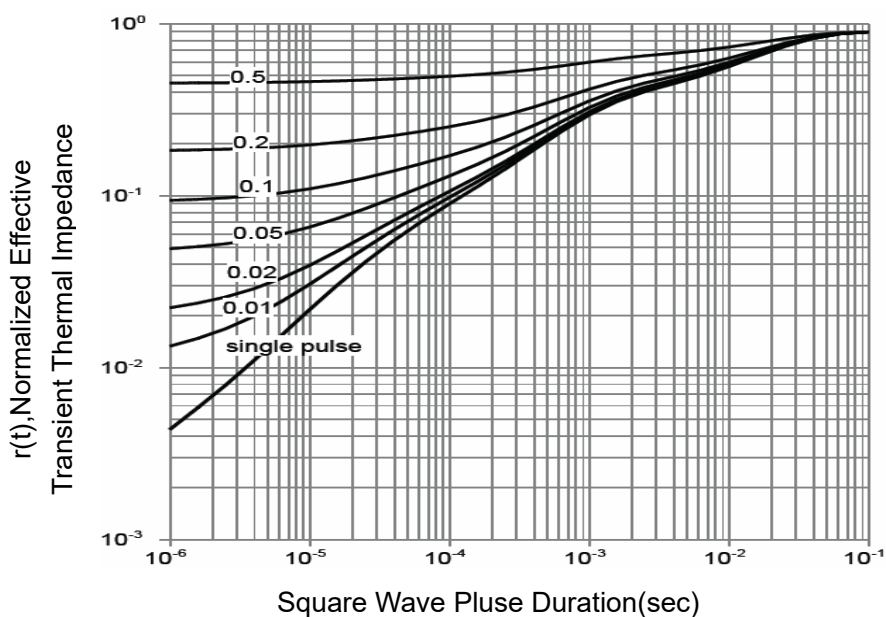
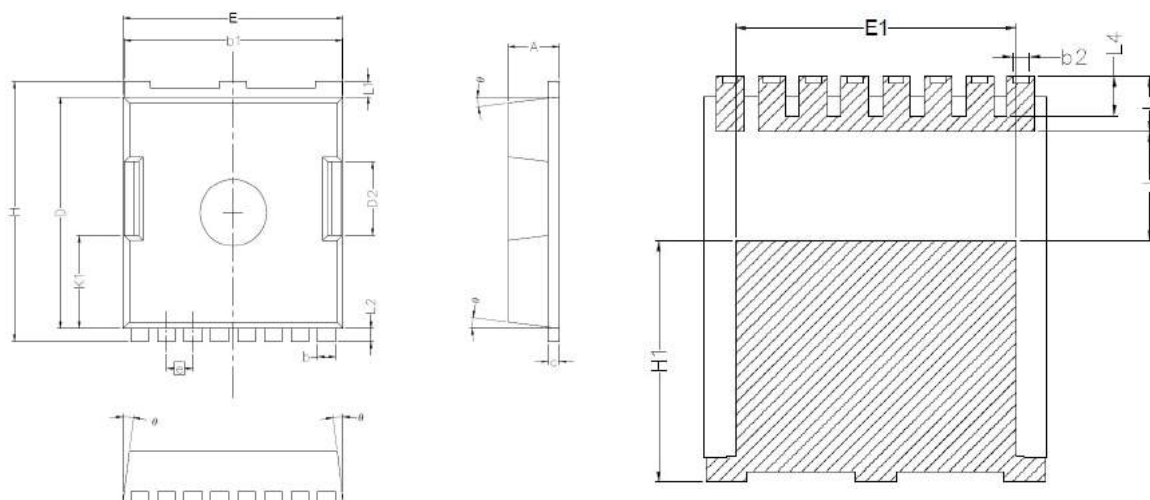


Figure11 normalized maximum transfer thermal impedance

■ 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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