MOT4N65T
N-MOSFET 650V,2.4Ω,4A

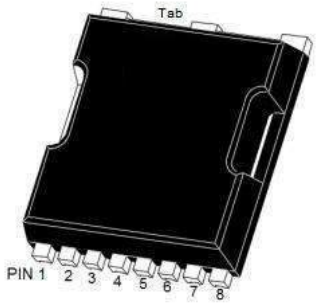
Features

- Uses MOT advanced double trench technology
- Low On-Resistance (RDS(on)≤2.8Ω)
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% avalanche tested
- Pb-free plating; RoHS compliant

Applications

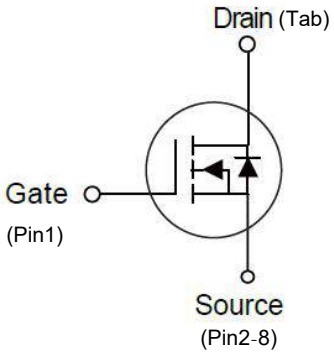
- Battery management
- Motor control and drive
- Synchronous rectification
- Switching applications

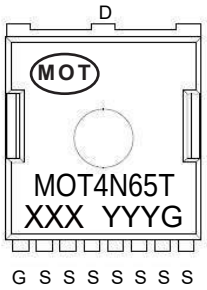
Pin configuration (Top view)



TOLL-8

Symbol





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

Marking

Key Performance Parameters

Parameter	Value	Unit
V_{DS}	650	V
R_{DS}(on),typ.	2.4	Ω
I_D	4	A

Ordering information

Type/Ordering Code	Package	Marking	Packing&Qty.(pcs)
MOT4N65T	TOLL-8	MOT4N65T	2000/Reel

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	650	V
Gate-Source Voltage		V_{GSS}	±30	V
Avalanche Current		I_{AR}	4.0	A
Drain Current	Continuous	I_D	4.0	A
	Pulsed	I_{DM}	16	A
Avalanche Energy	Single Pulsed	E_{AS}	260	mJ
	Repetitive	E_{AR}	10.6	mJ
Peak Diode Recovery dv/dt		dv/dt	4.5	V/ns
Power Dissipation		P_D	106	W
Junction Temperature		T_J	+150	°C
Operating Temperature		T_{OPR}	-55 ~ +150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

■ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS} = 0 V, I_D = 250μA	650	-	-	V
Drain-Source Leakage Current		I_{DSS}	V_{DS} = 650 V, V_{GS} = 0 V	-	-	10	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS} = 30 V, V_{DS} = 0 V	-	-	100	nA
	Reverse		V_{GS} = -30 V, V_{DS} = 0 V	-	-	-100	nA
Breakdown Voltage Temperature Coefficient		$\triangle BV_{DSS}/\triangle T_J$	I_D=250μA, Referenced to 25°C	-	0.6	-	V/°C
On characteristics							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5	-	4.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS} = 10 V, I_D = 2A	-	2.4	2.8	Ω
Dynamic characteristics							
Input Capacitance		C_{ISS}	V_{DS} = 25 V, V_{GS} = 0V, f = 1MHz	-	520	-	pF
Output Capacitance		C_{OSS}		-	70	-	pF
Reverse Transfer Capacitance		C_{RSS}		-	8	-	pF
Switching characteristics							
Turn-On Delay Time		$t_{D(ON)}$	V_{DD} = 325V, I_D = 4.0A, R_G = 25Ω (Note 1, 2)	-	13	-	ns
Turn-On Rise Time		t_R		-	45	-	ns
Turn-Off Delay Time		$t_{D(OFF)}$		-	25	-	ns
Turn-Off Fall Time		t_F		-	35	-	ns
Total Gate Charge		Q_G	V_{DS}= 520V,I_D = 4A V_{GS}= 10V (Note 1, 2)	-	15	-	nC
Gate-Source Charge		Q_{GS}		-	3.4	-	nC
Gate-Drain Charge		Q_{GD}		-	7.1	-	nC
Source-drain diode ratings and characteristics							
Drain-Source Diode Forward Voltage		V_{SD}	V_{GS} = 0 V, I_S = 4.0A	-	-	1.4	V
Maximum Continuous Drain-Source Diode Forward Current		I_S		-	-	4.4	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}		-	-	17.6	A
Reverse Recovery Time		t_{rr}	V_{GS} = 0V, I_S = 4.0A, dI_F/dt = 100 A/μs (Note 1)	-	250	-	ns
Reverse Recovery Charge		Q_{RR}		-	1.5	-	μC

Note: 1. Pulse Test: Pulse width≤300μs, Duty cycle≤2%
2. Essentially independent of operating temperature

■ TYPICAL CHARACTERISTICS

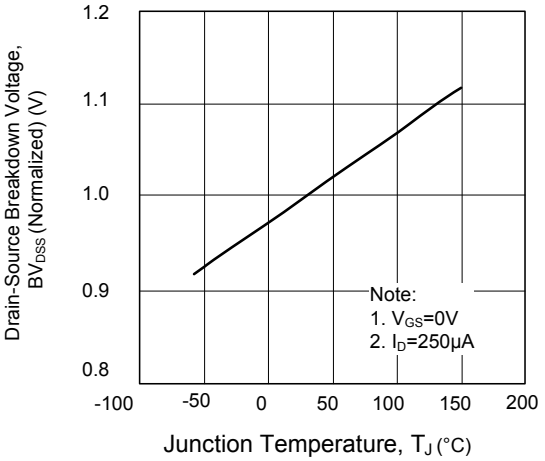


Figure 1: Break down voltage variation vs temperature

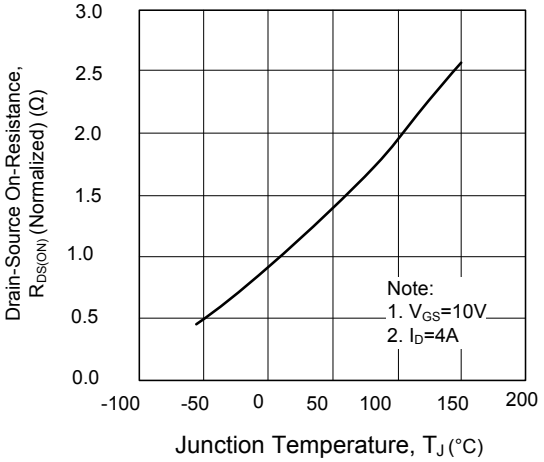


Figure 2: On-resistance junction temperature

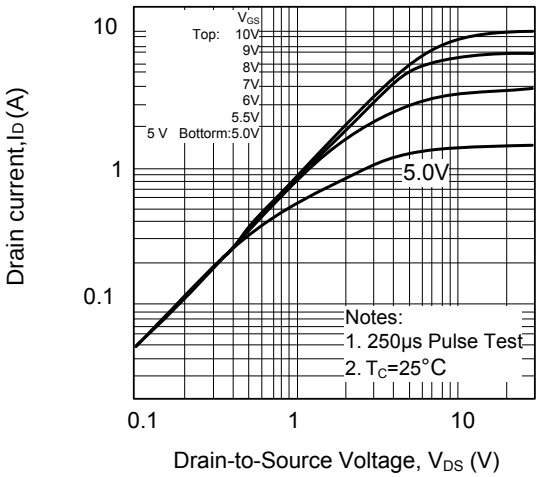


Figure 3: On-state characteristics

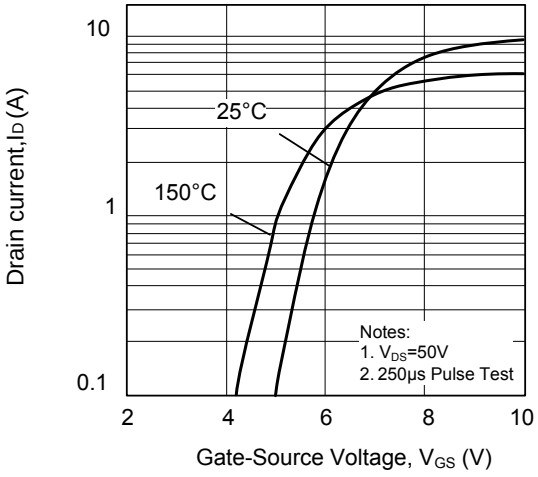


Figure 4: Transfer characteristics

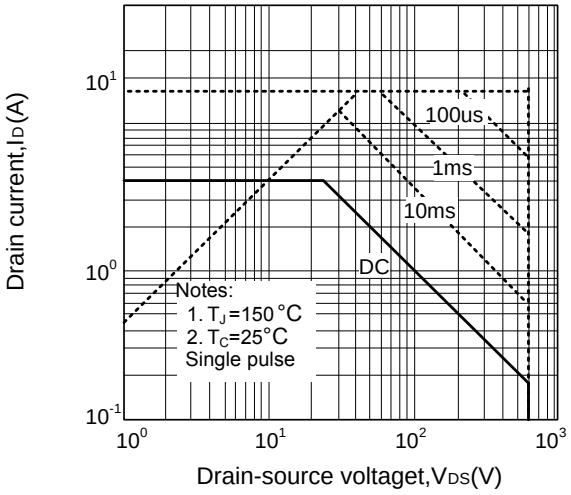


Figure 5: Safe operating area

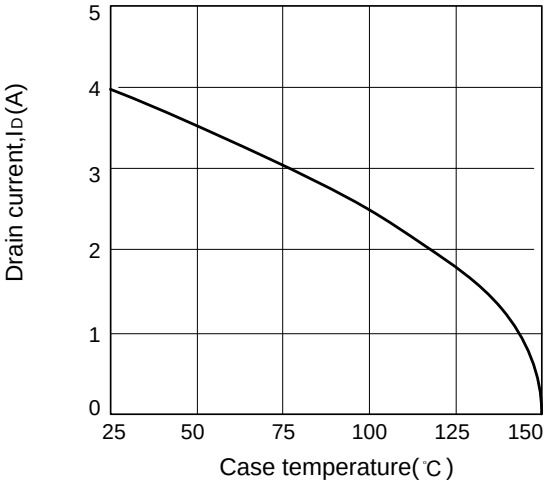


Figure 6: Drain current vs case temperature

■ TYPICAL CHARACTERISTICS(Cont.)

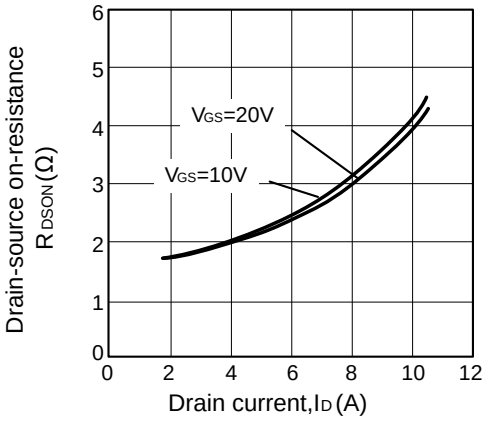


Figure 7: On-state varation vs drain current and gate voltage

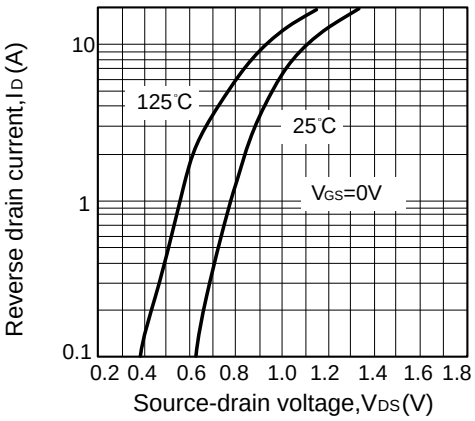


Figure 8: On-state current vs .allowable case temperature

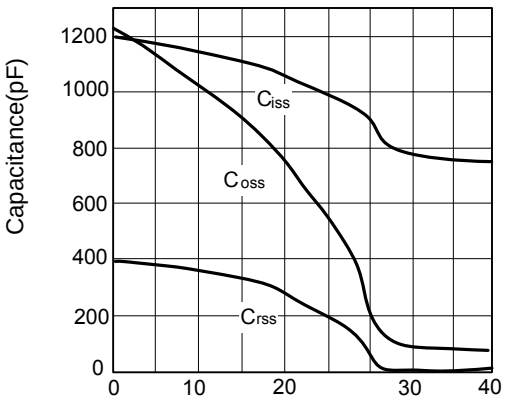


Figure 9: Capacitance characteristics

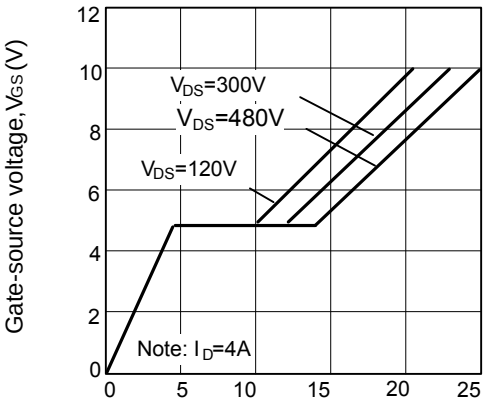


Figure 10: .Gate charge characteristics

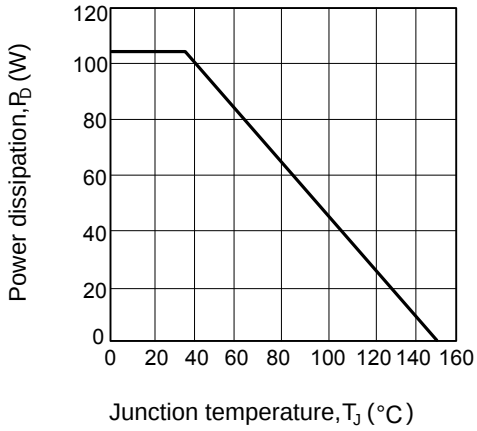
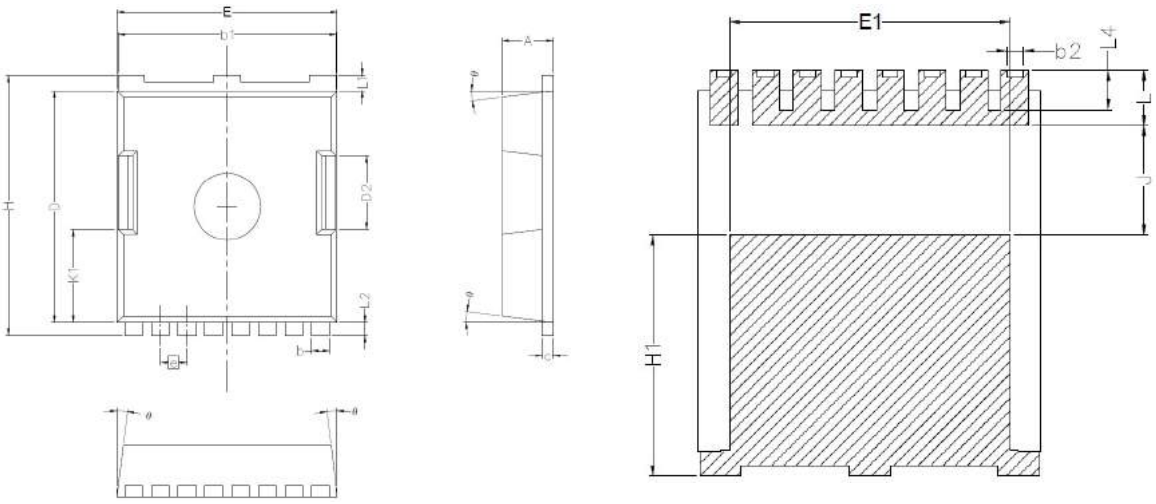


Figure 11:Power sissipation vs junction temperature

■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°

- The information contained hSurface-mounted package Advnced terch cell design Super trencherein is subject to change without notice.

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