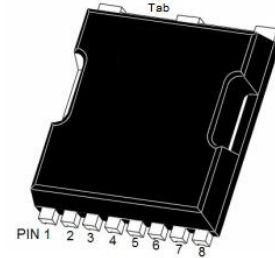


■ PRODUCT CHARACTERISTICS

VDSS	120V
$R_{DS(on)Typ}(V_{GS}@=10V)$	4.5mΩ
ID	250A

■ FEATURES

Surface-mounted package Advanced trench cell design Super trench

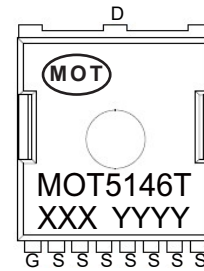


TOLL-8L

■ APPLICATIONS

High power system inverter
Light electric vehicles
BMS
Drones

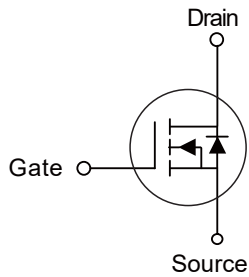
Pin configuration (Top view)



XXX = Lot Number
YYYY = Year Week

Marking

■ SYMBOL



Order information

Device	Package	Shipping
MOT5146T/TR	TOLL-8L	4000/Tape&Reel

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

Parameter	Symbol	Conditions	Min	Max	Unit
Drain-Source Voltage	V _{DS}	T _C = 25 °C	120	-	V
Gate-Source Voltage	V _{GS}	T _C = 25 °C	-	±20	V
Drain Current (DC) *	I _D	T _C = 25 °C, V _{GS} = 10 V	-	250	A
		T _C = 100 °C, V _{GS} = 10 V	-	177	A
Drain Current (Pulsed) ***	I _{DM}	T _C = 25 °C, V _{GS} = 10 V	-	396	A
Drain power dissipation	P _{tot}	T _C = 25 °C	-	375	W
Storage Temperature	T _{stg}		-55	175	°C
Junction Temperature	T _J		-	175	°C
Continuous-Source Current	I _S	T _C = 25 °C	-	250	A
Single Pulsed Avalanche Energy	E _{AS}	V _{DD} = 50V , L= 1.0 mH	-	922	mJ
Thermal Resistance- Junction to Ambient**	R _{θJA}		-	40	°C/W
Thermal Resistance- Junction to Case**	R _{θJC}		-	0.45	

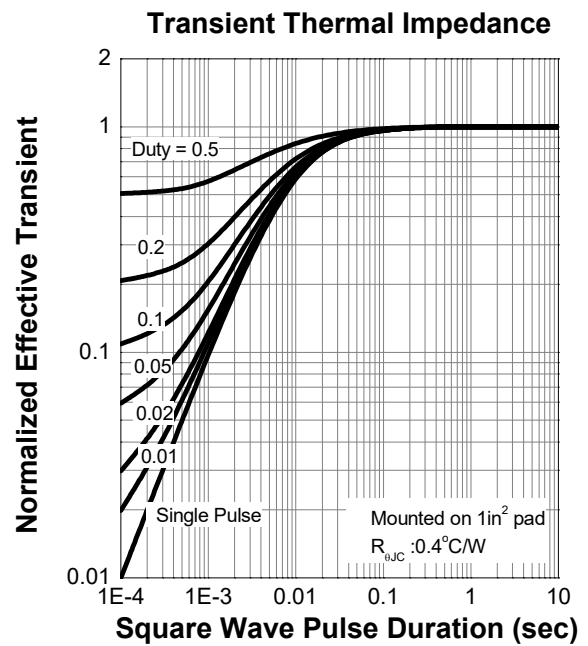
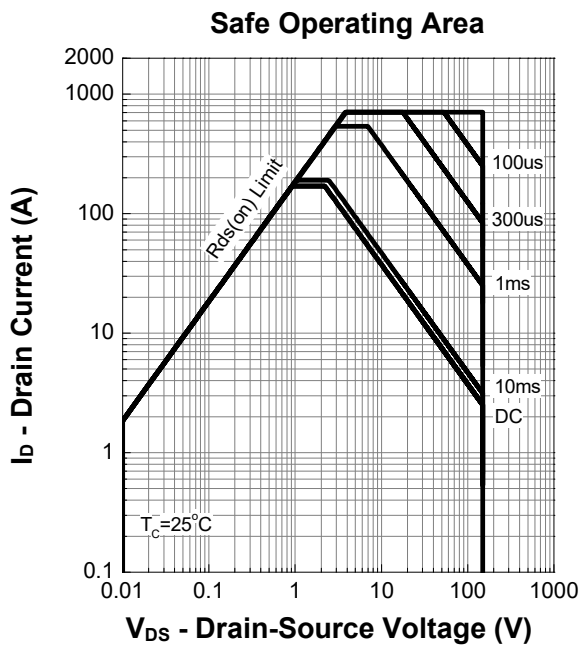
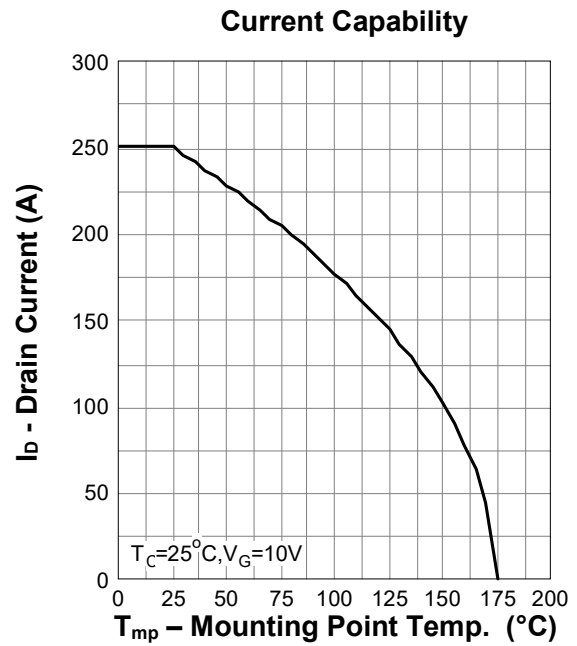
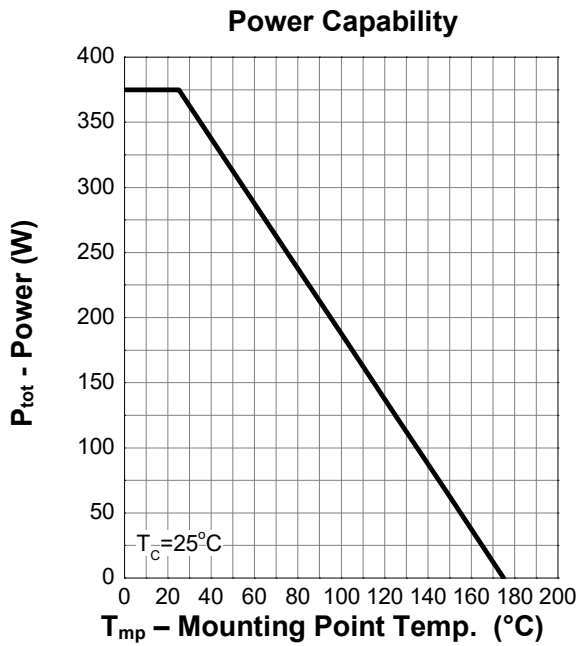
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _{DS} = 250 μA	120	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	V
Drain Leakage Current	I _{DSS}	V _{DS} = 96 V, V _{GS} = 0 V	-	-	1	μA
Gate Leakage Current	I _{GSS}	V _{GS} = 0 V, V _{GS} = ± 20 V	-	-	±100	nA
On-State Resistance ^a	R _{DS(ON)}	V _{GS} = 10 V, I _{DS} = 20A	-	4.5	5.5	mΩ
		V _{GS} = 6 V, I _{DS} = 10A	-	6.5	7.5	
Diode Characteristics						
Diode Forward Voltage ^a	V _{SD}	I _{SD} = 20A, V _{GS} = 0 V	-	-	1.3	V
Reverse Recovery Time	t _{rr}	I _{DS} = 20A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	92	-	nS
Reverse Recovery Charge	Q _{rr}		-	337	-	nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 60 V Frequency = 1 MHz	-	4779	-	pF
Output Capacitance	C _{oss}		-	570	-	
Reverse Transfer Capacitance ^b	C _{rss}		-	34	-	
Turn-on Delay Time	t _{d(on)}	V _{DS} = 60 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 3 Ω, I _{DS} = 20A	-	16	-	nS
Turn-on Rise	t _r		-	27	-	
Turn-off Delay Time	t _{d(off)}		-	51	-	
Turn-off Fall Time	t _f		-	27	-	
Gate Charge Characteristics^b						
Total Gate Charge	Q _g	V _{DS} = 60 V, V _{GS} = 10 V, I _{DS} = 20A	-	80	-	nC
Gate-Source Charge	Q _{gs}		-	24	-	
Gate-Drain Charge	Q _{gd}		-	18	-	

Notes :

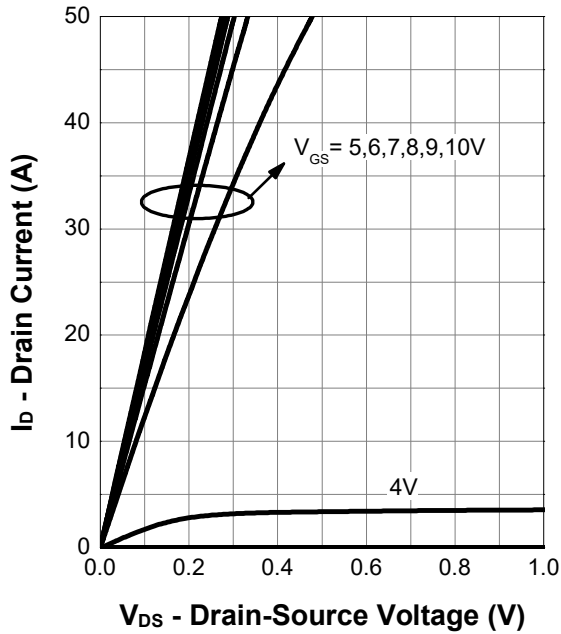
- * Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- ** Surface Mounted on minimum footprint pad area.
- *** Limited by bonding wire
- a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%
- b : Guaranteed by design, not subject to production testing

■ TYPICAL CHARACTERISTICS

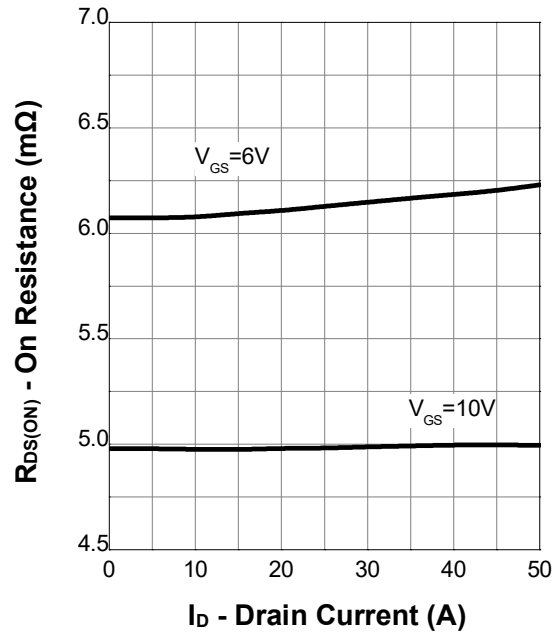


■ TYPICAL CHARACTERISTICS(Cont.)

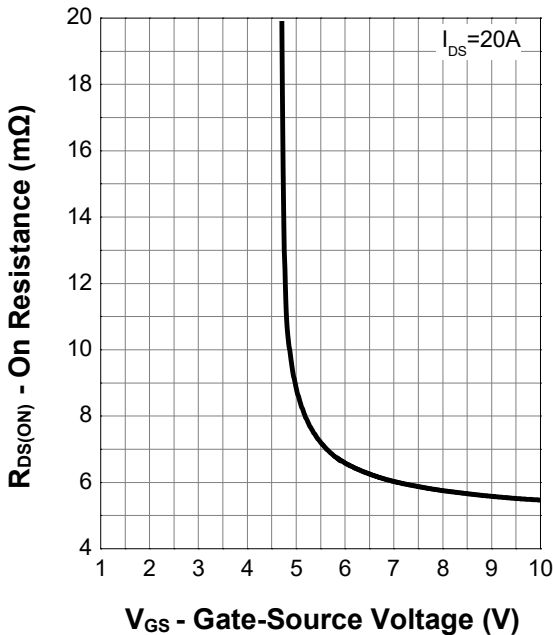
Output Characteristics



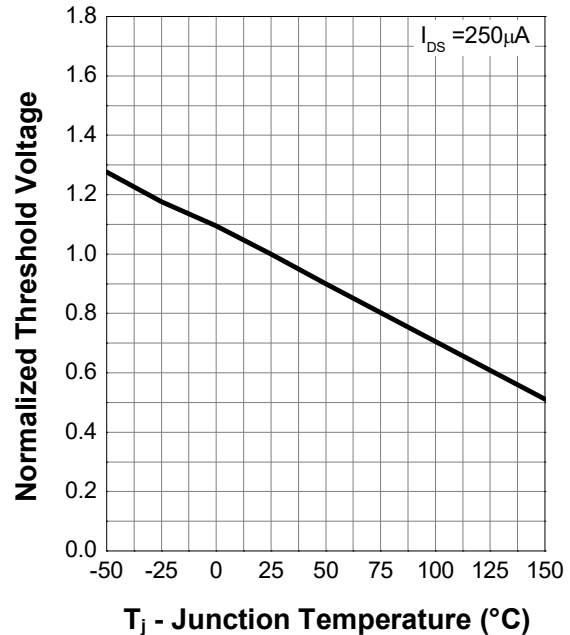
On Resistance



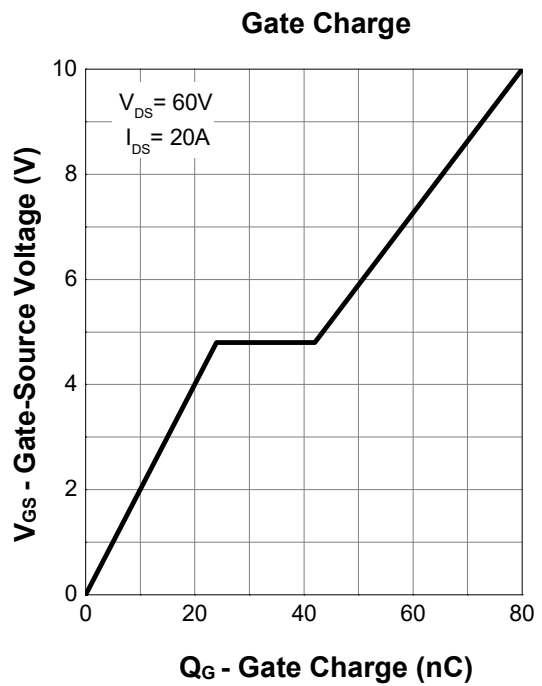
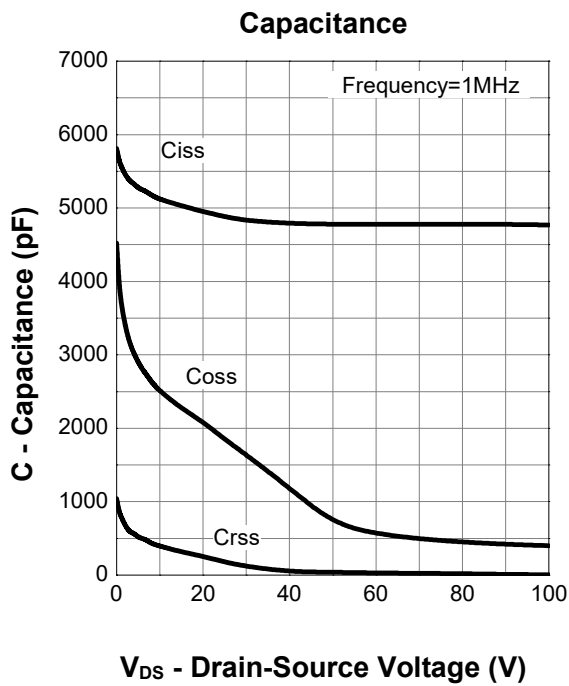
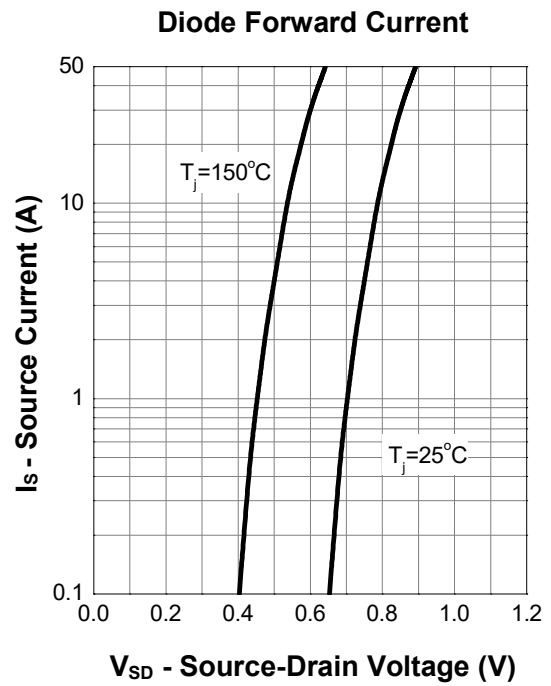
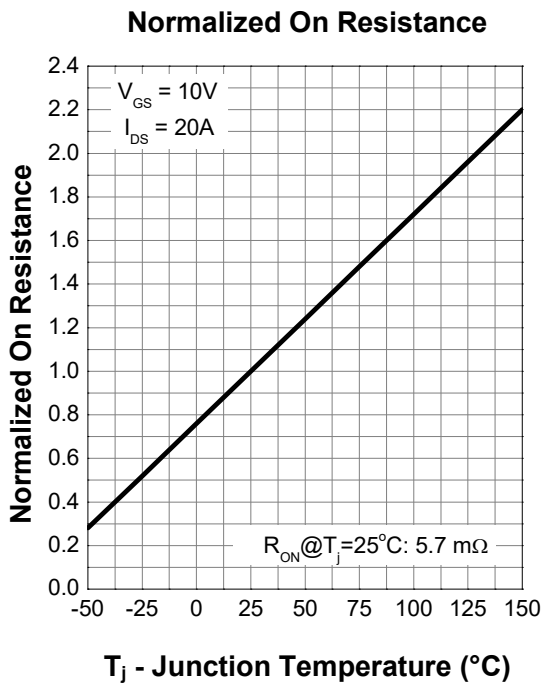
Transfer Characteristics



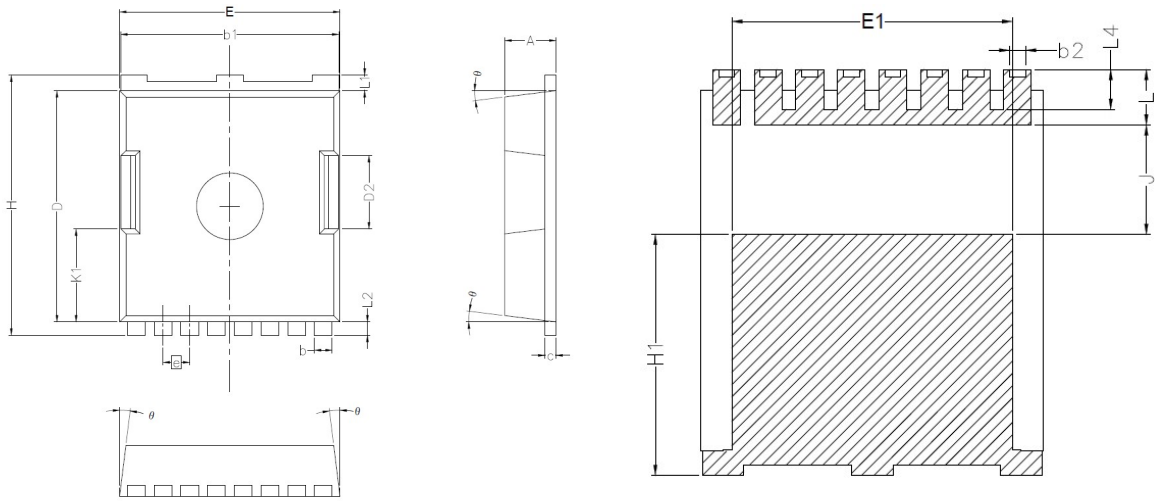
Normalized Threshold Voltage



■ TYPICAL CHARACTERISTICS(Cont.)



■ TOLL-8L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions 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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