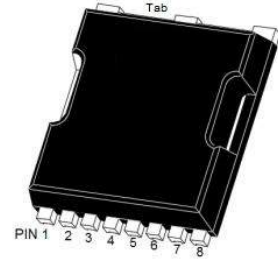


■ PRODUCT CHARACTERISTICS

VDSS	40V
$R_{DS(on)}$ tpy( @V <sub>GS</sub> =4.5 V)	2mΩ
$R_{DS(on)}$ tpy( @V <sub>GS</sub> =10 V)	1.05mΩ
ID	300A

■ FEATURES

Surface-mounted package Advanced  
terch cell design Super trench

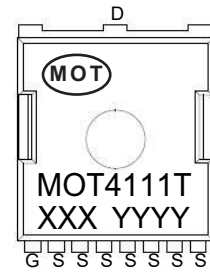


TOLL-8L

■ APPLICATIONS

High power system inverter  
Light electric vehicles  
BMS  
Drones

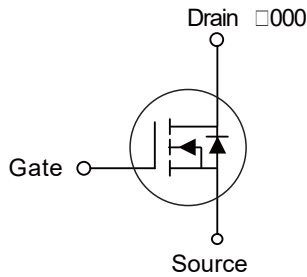
Pin configuration (Top view)



XXX = Lot Number  
YYYY = Year Week

Marking

■ SYMBOL



Order information

Device	Package	Shipping
MOT4111T/TR	TOLL-8L	2000/Tape&Reel

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

Parameter	Symbol	Conditions	Min	Max	Unit
Drain-Source Voltage	$V_{DS}$	$T_C = 25^\circ\text{C}$	40	-	V
Gate-Source Voltage	$V_{GS}$	$T_C = 25^\circ\text{C}$	-	$\pm 20$	V
Drain Current ( DC ) *	$I_D$	$T_C = 25^\circ\text{C}, V_{GS} = 10\text{ V}$	-	300	A
		$T_C = 100^\circ\text{C}, V_{GS} = 10\text{ V}$	-	200	A
Drain Current ( Pulsed ) ***	$I_{DM}$	$T_C = 25^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1200	A
Drain power dissipation	$P_{tot}$	$T_C = 25^\circ\text{C}$	-	500	W
Storage Temperature	$T_{stg}$		-55	150	$^\circ\text{C}$
Junction Temperature	$T_J$		-	150	$^\circ\text{C}$
Continuous-Source Current	$I_S$	$T_C = 25^\circ\text{C}$	-	300	A
Single Pulsed Avalanche Energy	$E_{AS}$	$V_{DD} = 40\text{ V}, L = 1\text{ mH}$	-	1352	mJ
Thermal Resistance- Junction to Ambient**	$R_{\theta JA}$		-	32.8	$^\circ\text{C/W}$
Thermal Resistance- Junction to Case**	$R_{\theta JC}$		-	0.25	

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

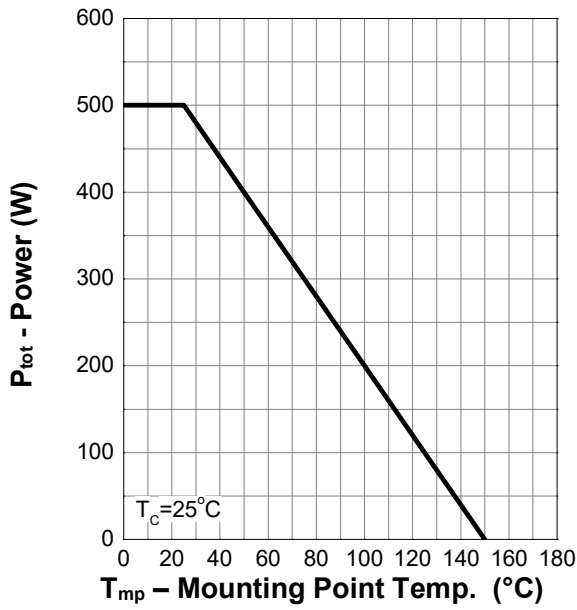
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	40	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	1	1.7	3	V
Drain Leakage Current	$I_{DSS}$	$V_{DS} = 32\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	$\pm 100$	nA
On-State Resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_{DS} = 30\text{A}$	-	1.05	1.1	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_{DS} = 30\text{A}$	-	2.0	2.5	
Diode Characteristics						
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_{SD} = 50\text{A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
Reverse Recovery Time	$t_{rr}$	$I_{DS} = 50\text{A}, V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	25	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	20	-	nC
Dynamic Characteristics						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{ V}, V_{DS} = 20\text{ V}$ Frequency = 1 MHz	-	13725	-	pF
Output Capacitance	$C_{oss}$		-	1031	-	
Reverse Transfer Capacitance <sup>b</sup>	$C_{riss}$		-	321	-	
Turn-on Delay Time	$t_d(on)$	$V_{DS} = 20\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 0.4\ \Omega,$ $I_{DS} = 50\text{A}$	-	32	-	nS
Turn-on Rise	$t_r$		-	140	-	
Turn-off Delay Time	$t_d(off)$		-	179	-	
Turn-off Fall Time	$t_f$		-	120	-	
Gate Charge Characteristics <sup>b</sup>						
Total Gate Charge	$Q_g$	$V_{DS} = 20\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{A}$	-	231	-	nC
Gate-Source Charge	$Q_{gs}$		-	58	-	
Gate-Drain Charge	$Q_{gd}$		-	33	-	

Notes :

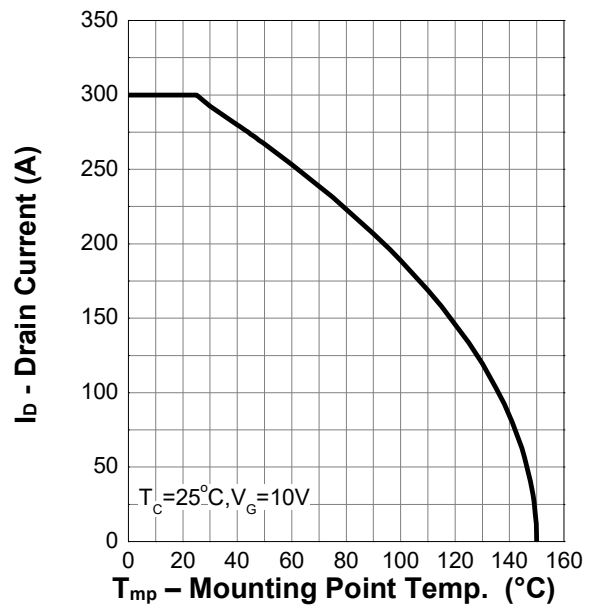
- \* Pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$
- \*\* Surface Mounted on minimum footprint pad area.
- \*\*\* Limited by bonding wire
- a : Pulse test ; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$
- b : Guaranteed by design, not subject to production testing

■ TYPICAL CHARACTERISTICS

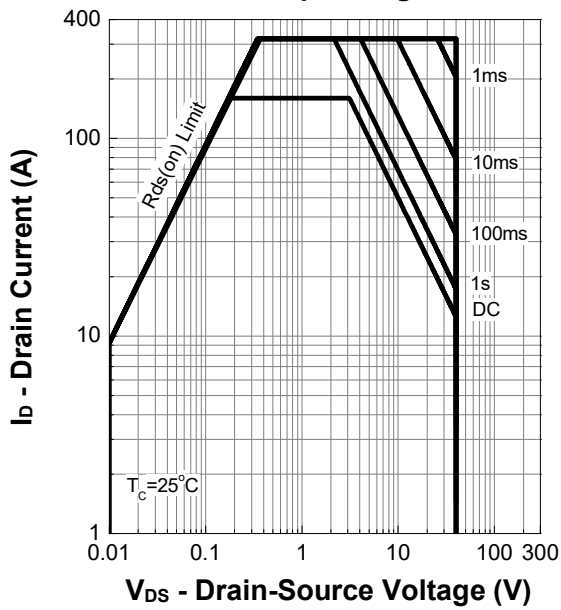
Power Capability



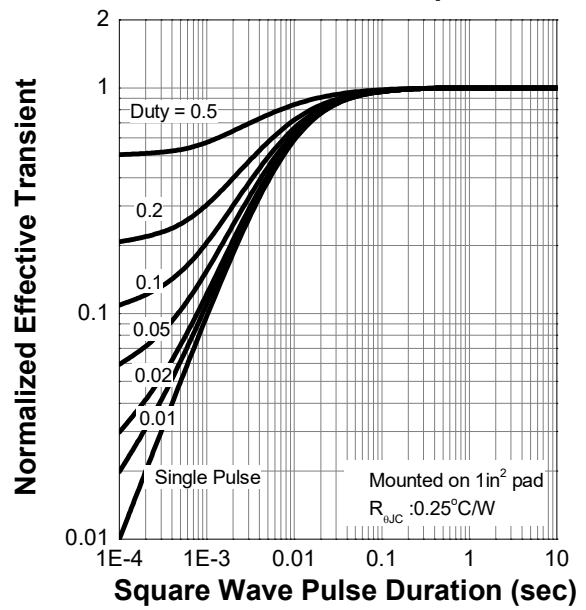
Current Capability



Safe Operating Area

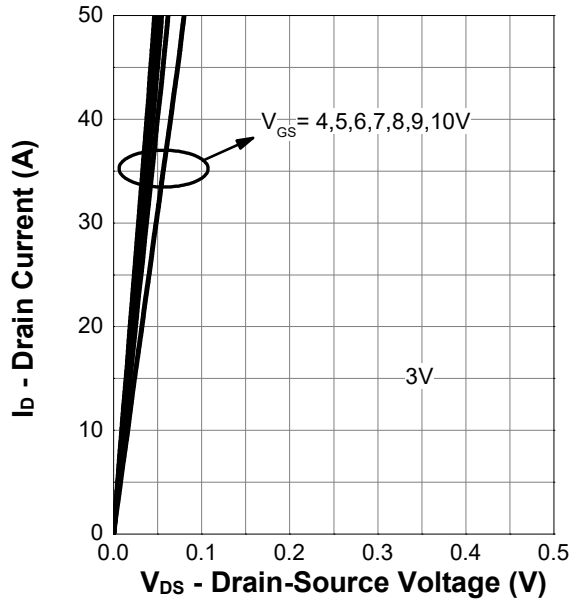


Transient Thermal Impedance

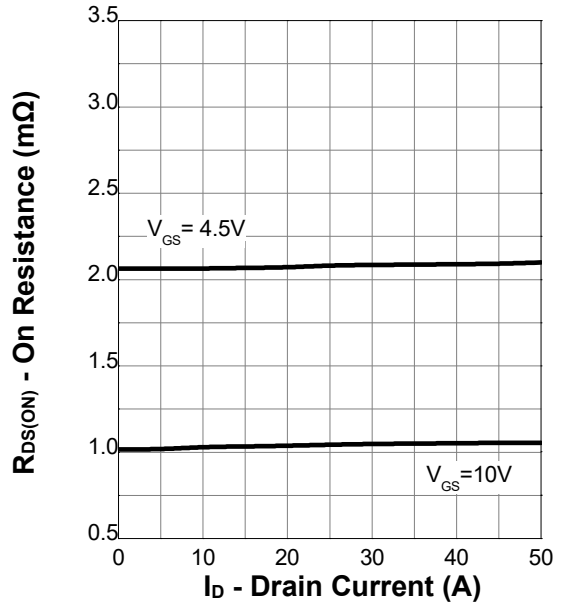


■ TYPICAL CHARACTERISTICS(Cont.)

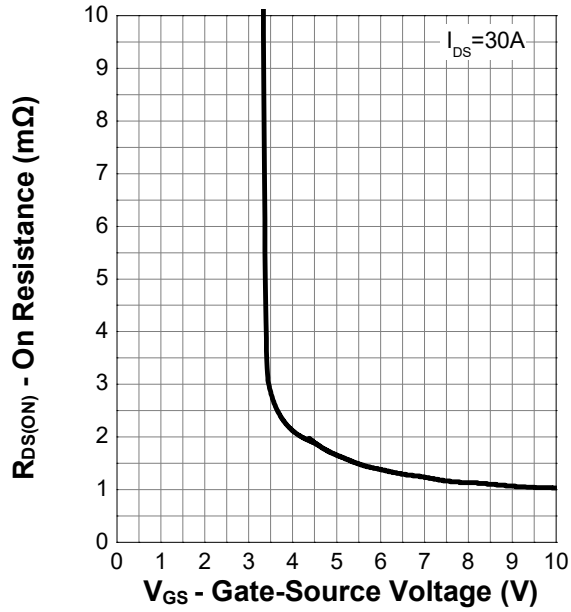
Output Characteristics



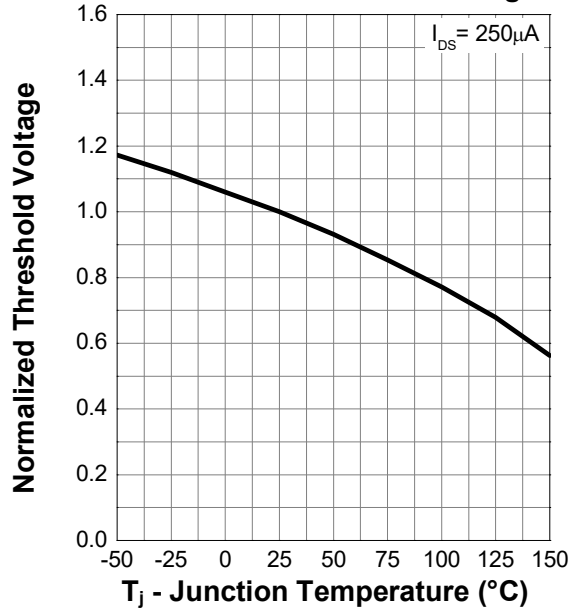
On Resistance



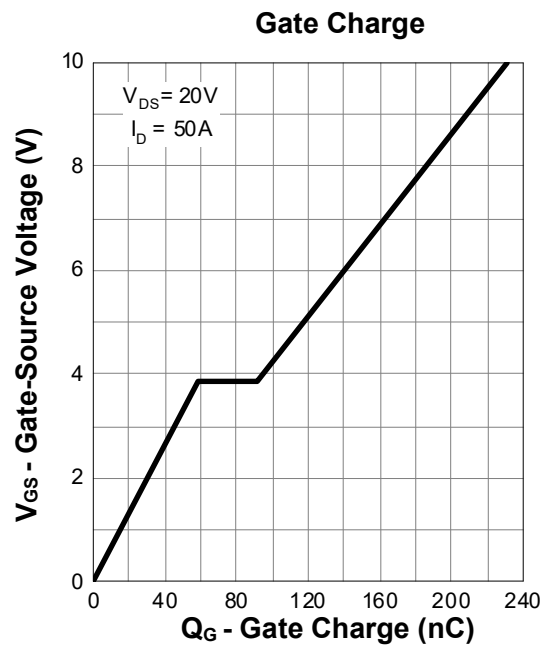
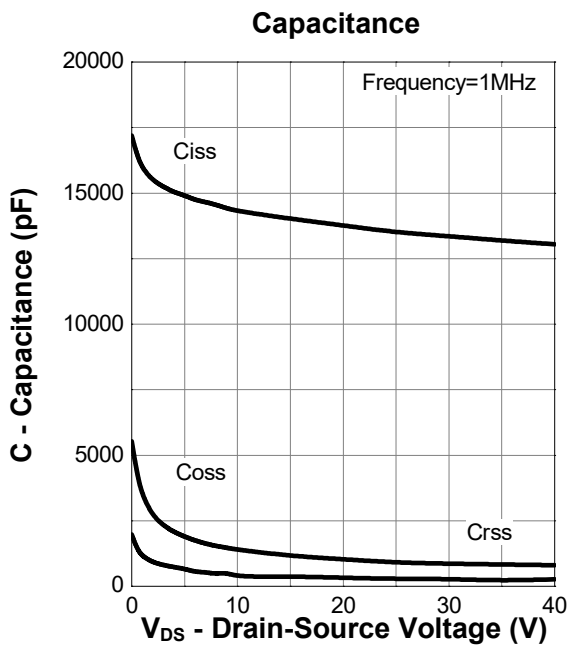
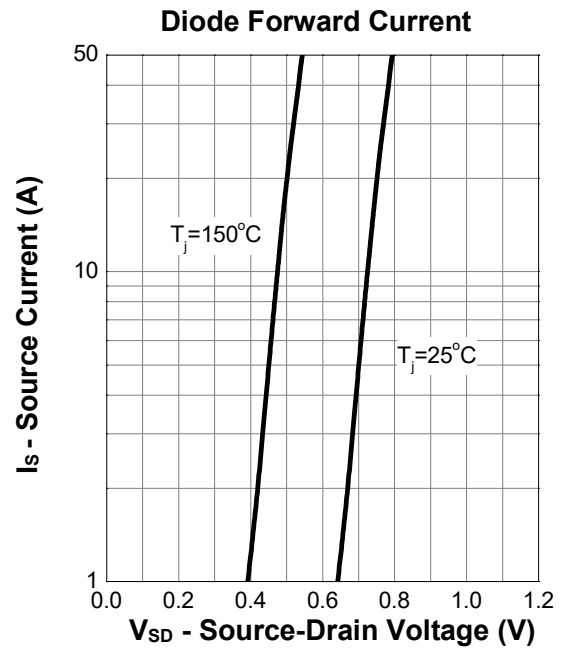
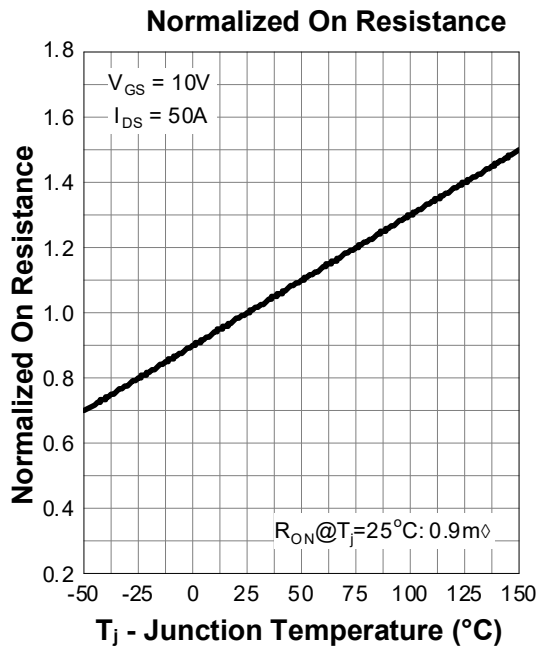
Transfer Characteristics



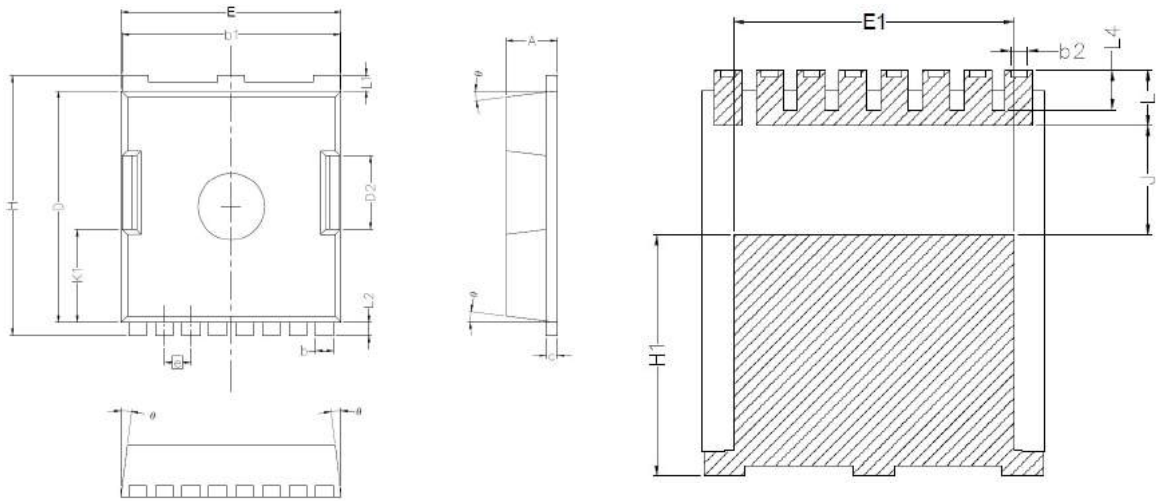
Normalized Threshold Voltage



■ 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
$\theta$	4°	10°

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