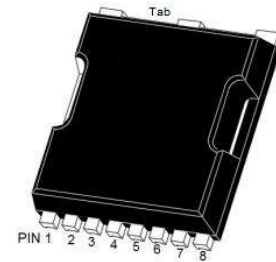


■ PRODUCT CHARACTERISTICS

VDSS	85V
$R_{DS(on)Typ}(V_{GS}@=10V)$	1.1mΩ
ID	300A

■ FEATURES

Surface-mounted package
Advanced trench cell design
Super trench

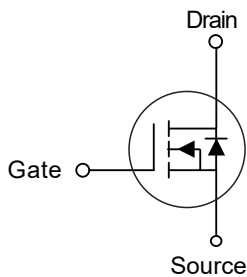


TOLL-8L

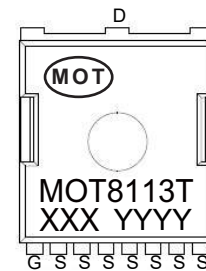
■ APPLICATIONS

High power system inverter
Light electric vehicles
BMS
Drones

■ SYMBOL



Pin configuration (Top view)



XXX = Lot Number
YYYY = Year Week

Marking

Order information

Device	Package	Shipping
MOT8113T/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}	$T_C = 25^\circ\text{C}$	85	-	V
Gate-Source Voltage	V_{GS}	$T_C = 25^\circ\text{C}$	-	± 20	V
Drain Current (DC) *	I_D	$T_C = 25^\circ\text{C}, V_{GS} = 10\text{ V}$	-	300	A
		$T_C = 100^\circ\text{C}, V_{GS} = 10\text{ V}$	-	267	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	175	$^\circ\text{C}$
Junction Temperature	T_J		-	175	$^\circ\text{C}$
Continuous-Source Current	I_S	$T_C = 25^\circ\text{C}$	-	300	A
Single Pulsed Avalanche Energy	E_{AS}	$V_{DD}=40\text{V}, L=0.5\text{mH}$	-	2800	mJ
Thermal Resistance- Junction to Ambient**	$R_{\theta JA}$		-	40	$^\circ\text{C/W}$
Thermal Resistance- Junction to Case**	$R_{\theta JC}$		-	0.25	

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

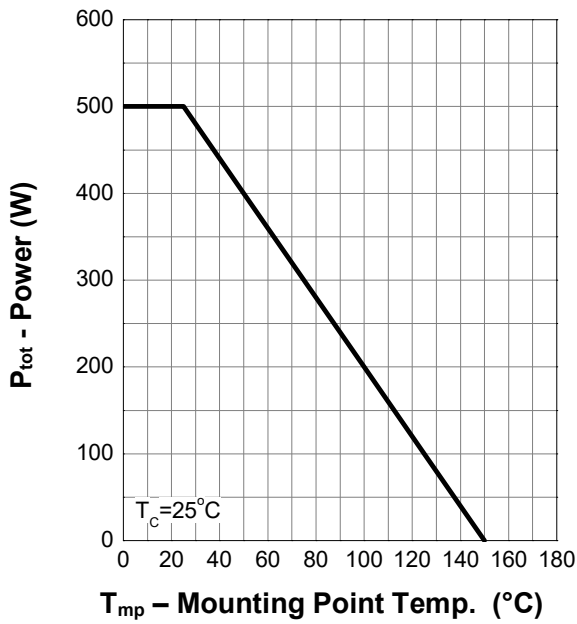
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	85	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	2	-	4	V
Drain Leakage Current	I_{DSS}	$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	± 100	nA
On-State Resistance ^a	$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	1.1	1.4	m Ω
Diode Characteristics						
Diode Forward Voltage ^a	V_{SD}	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.2	V
Reverse Recovery Time	t_{rr}	$I_{DS} = 50\text{ A}, V_{GS} = 0\text{ V}$ $dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	120	-	nS
Reverse Recovery Charge	Q_{rr}		-	360	-	nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 50\text{ V}$ Frequency = 1 MHz	-	14490	-	pF
Output Capacitance	C_{oss}		-	2350	-	
Reverse Transfer Capacitance ^b	C_{rss}		-	472	-	
Turn-on Delay Time	$t_d(on)$	$V_{DS} = 50\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 4.5\ \Omega, R_L = 1\ \Omega,$ $I_{DS} = 50\text{ A}$	-	39	-	nS
Turn-on Rise Time	t_r		-	122	-	
Turn-off Delay Time	$t_d(off)$		-	155	-	
Turn-off Fall Time	t_f		-	137	-	
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS} = 50\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	240	-	nC
Gate-Source Charge	Q_{gs}		-	56	-	
Gate-Drain Charge	Q_{gd}		-	60	-	

Notes :

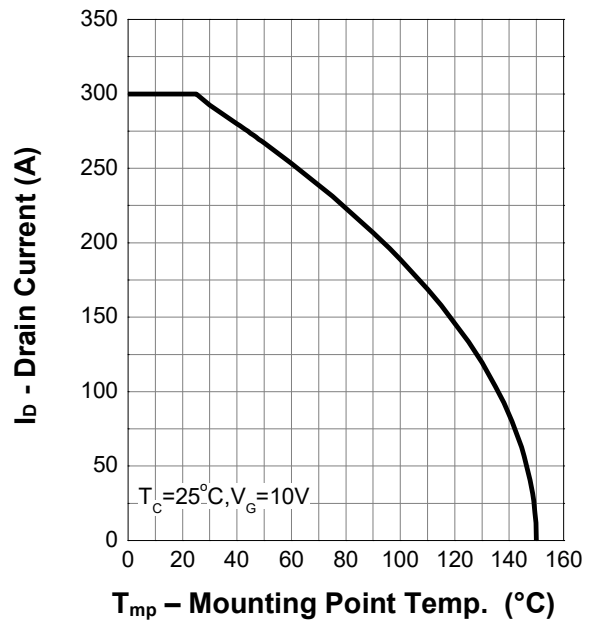
- * Pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$
- ** Surface Mounted on minimum footprint pad area.
- *** Limited by bonding wire
- a : Pulse test ; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$
- b : Guaranteed by design, not subject to production testing

■ TYPICAL CHARACTERISTICS

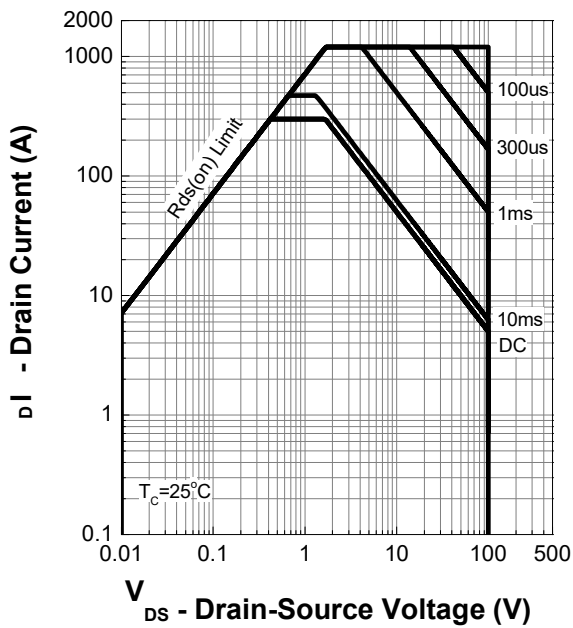
Power Capability



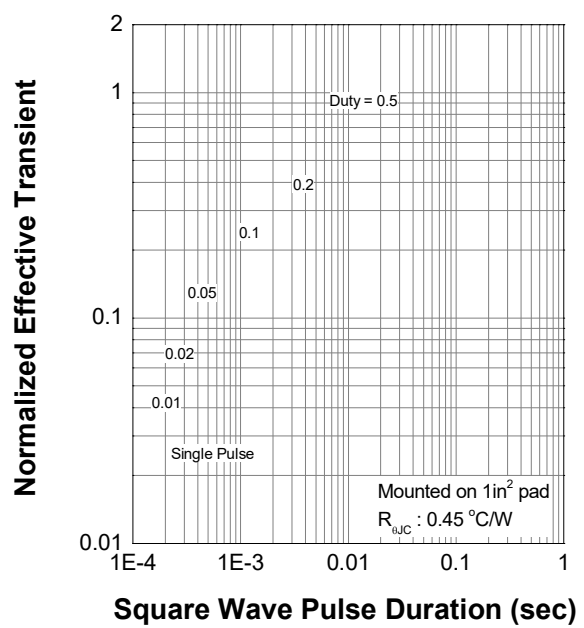
Current Capability



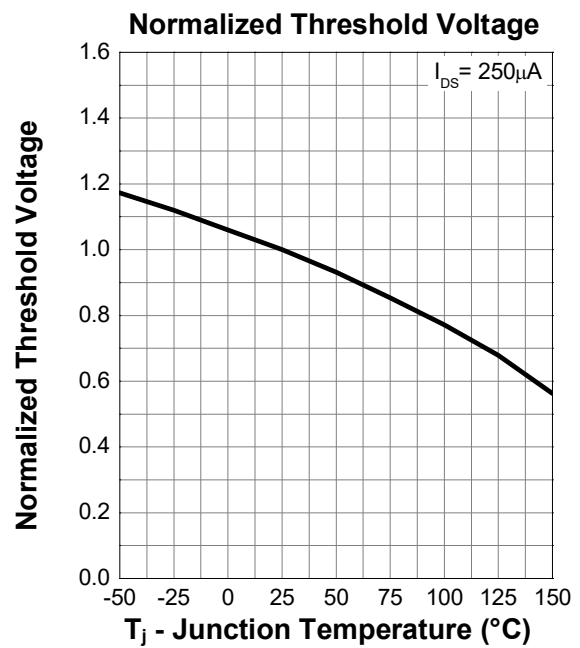
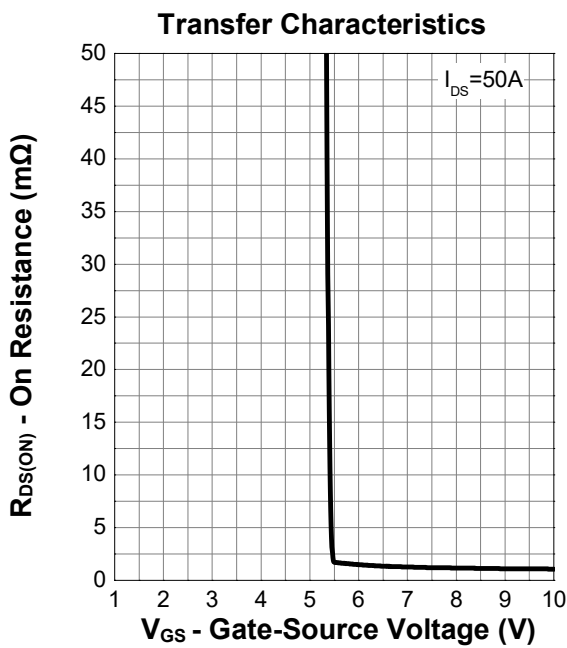
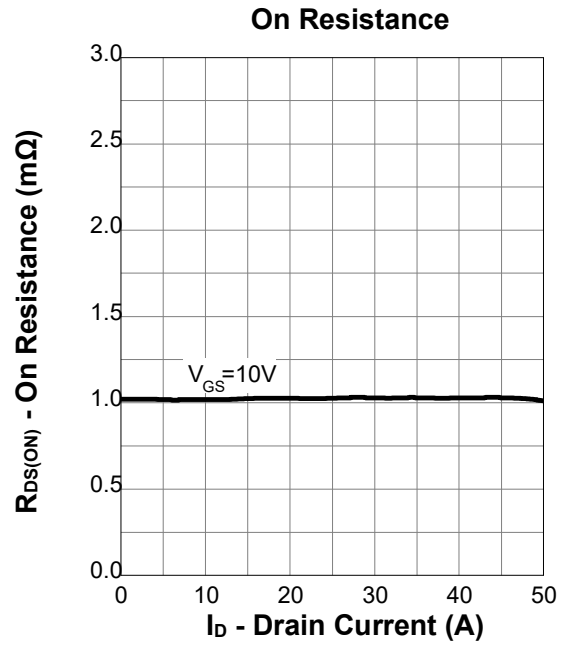
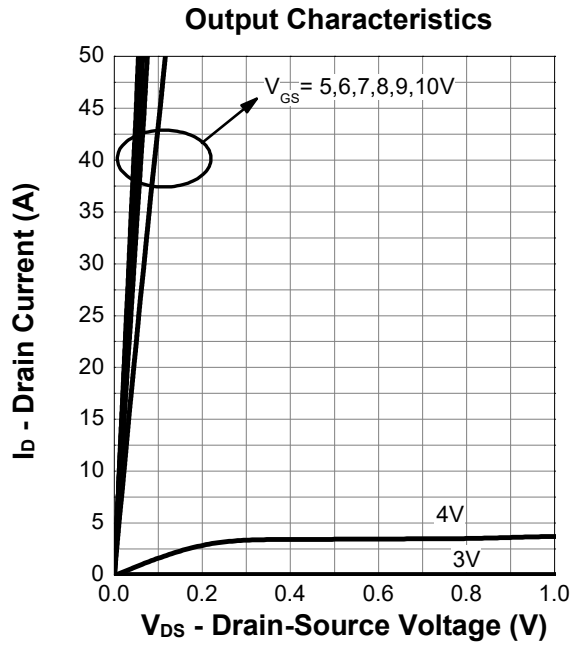
Safe Operating Area



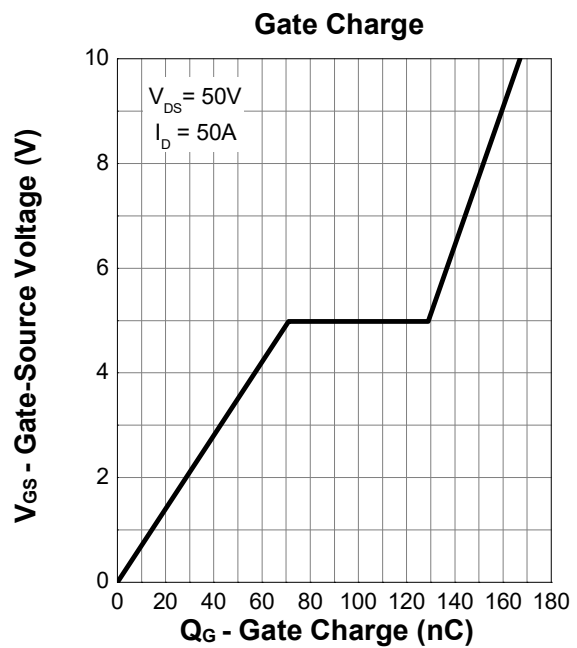
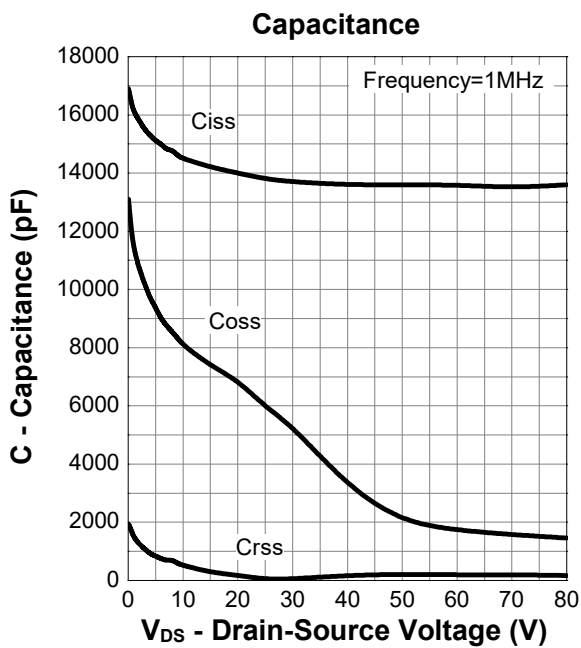
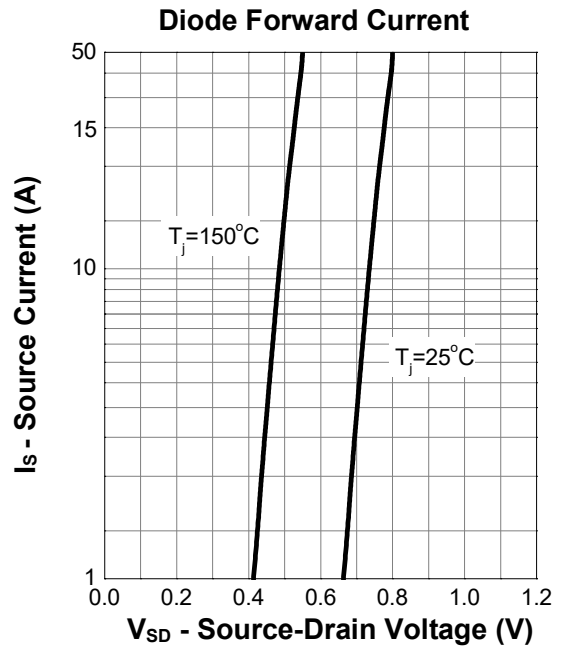
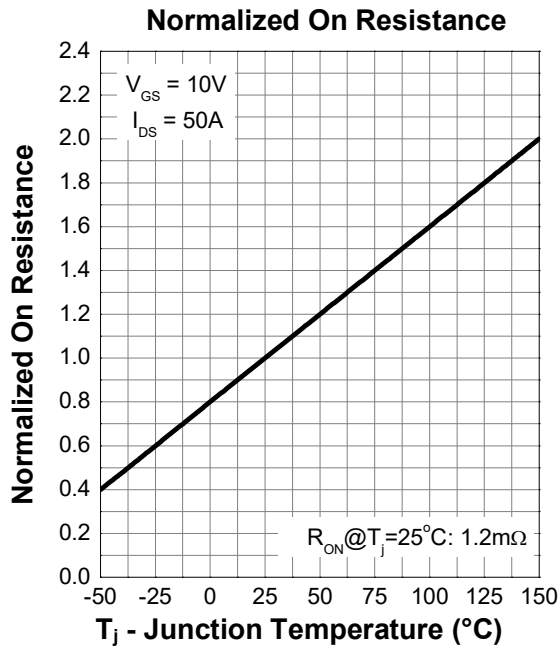
Transient Thermal Impedance



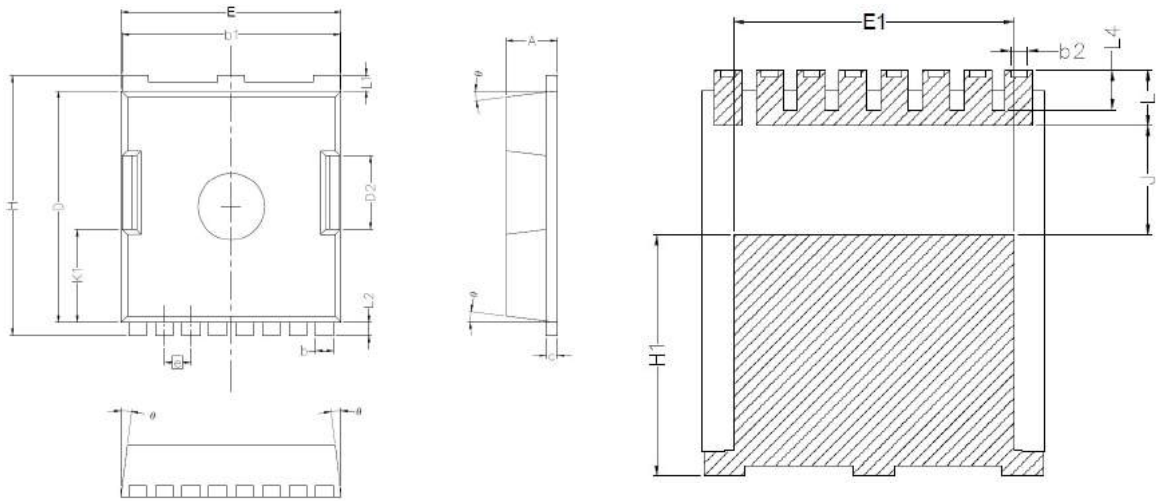
■ TYPICAL CHARACTERISTICS(Cont.)



■ 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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