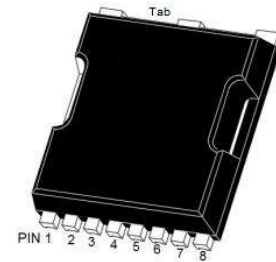


■ PRODUCT CHARACTERISTICS

VDSS	60V
$R_{DS(on)Typ}(V_{GS} = 10 V)$	1.5mΩ
ID	229A

■ FEATURES

Surface-mounted package Advanced trench cell design Super trench

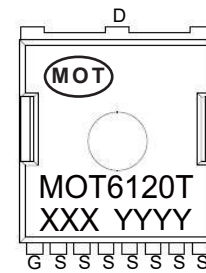


TOLL-8L

■ APPLICATIONS

High power system inverter
Light electric vehicles
BMS
Drones

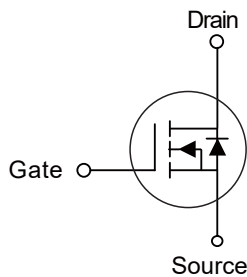
Pin configuration (Top view)



XXX = Lot Number
YYYY = Year Week

Marking

■ SYMBOL



Order information

Device	Package	Shipping
MOT6120T/TR	TOLL-8L	2000/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	60	-	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	-	229	A
		T _C = 100 °C, V _{GS} = 10 V	-	162	A
Drain Current (Pulsed) ***	I _{DM}	T _C = 25 °C, V _{GS} = 10 V	-	640	A
Drain power dissipation	P _{tot}	T _C = 25 °C	-	300	W
Storage Temperature	T _{stg}		-55	175	°C
Junction Temperature	T _J		-	175	°C
Continuous-Source Current	I _S	T _C = 25 °C	-	229	A
Single Pulsed Avalanche Energy	E _{AS}	V _{DD} = 50V , L= 1.0 mH	-	1512	mJ
Thermal Resistance- Junction to Ambient**	R _{θJA}		-	42	°C/W
Thermal Resistance- Junction to Case**	R _{θJC}		-	0.5	

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

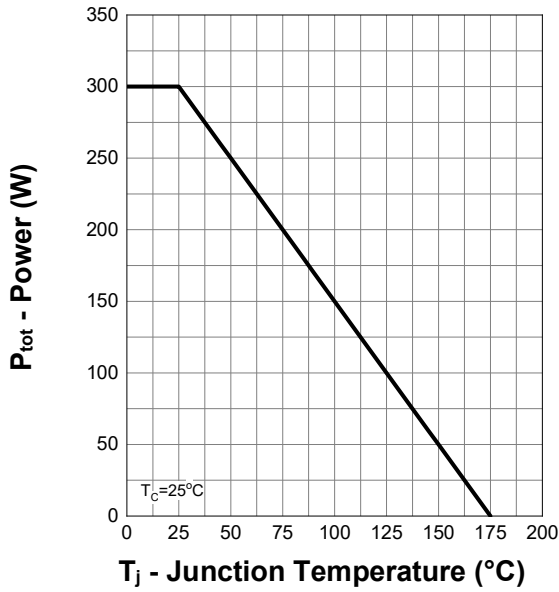
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _{DS} = 250 μA	60	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	1	-	3	V
Drain Leakage Current	I _{DSS}	V _{DS} = 48 V, V _{GS} = 0 V	-	-	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} = 50A	-	1.5	2.0	mΩ
		V _{GS} = 6 V, I _{DS} = 30A	-	2.4	2.7	
Diode Characteristics						
Diode Forward Voltage ^a	V _{SD}	I _{SD} = 50A, V _{GS} = 0 V	-	-	1.3	V
Reverse Recovery Time	t _{rr}	I _{DS} = 50A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	18	-	nS
Reverse Recovery Charge	Q _{rr}		-	21	-	nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 30 V Frequency = 1 MHz	-	15321	-	pF
Output Capacitance	C _{oss}		-	545	-	
Reverse Transfer Capacitance ^b	C _{riss}		-	94	-	
Turn-on Delay Time	t _{d(on)}	V _{DS} = 20 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 0.6 Ω, I _{DS} = 50A	-	25	-	nS
Turn-on Rise	t _r		-	113	-	
Turn-off Delay Time	t _{d(off)}		-	198	-	
Turn-off Fall Time	t _f		-	122	-	
Gate Charge Characteristics^b						
Total Gate Charge	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _{DS} = 50A	-	254	-	nC
Gate-Source Charge	Q _{gs}		-	59	-	
Gate-Drain Charge	Q _{gd}		-	31	-	

Notes :

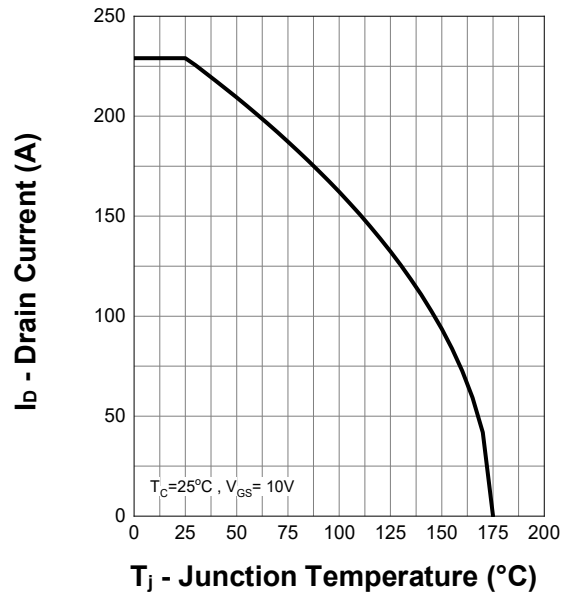
- * Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- ** Surface Mounted on minimum footprint pad area.
- *** Limited by bonding wire
- a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%
- b : Guaranteed by design, not subject to production testing

■ TYPICAL CHARACTERISTICS

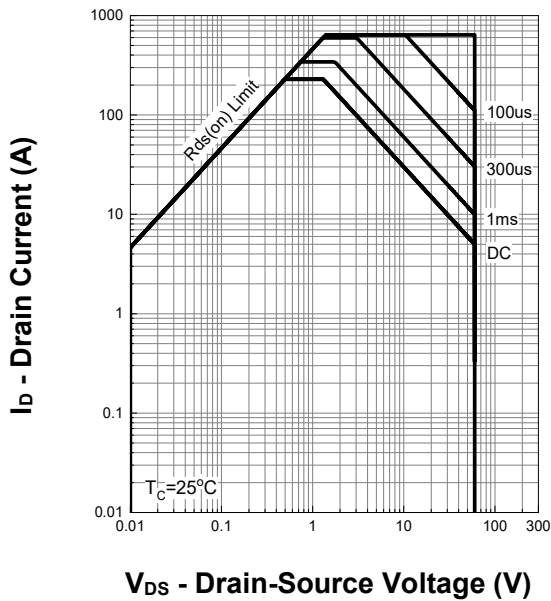
Power Capability



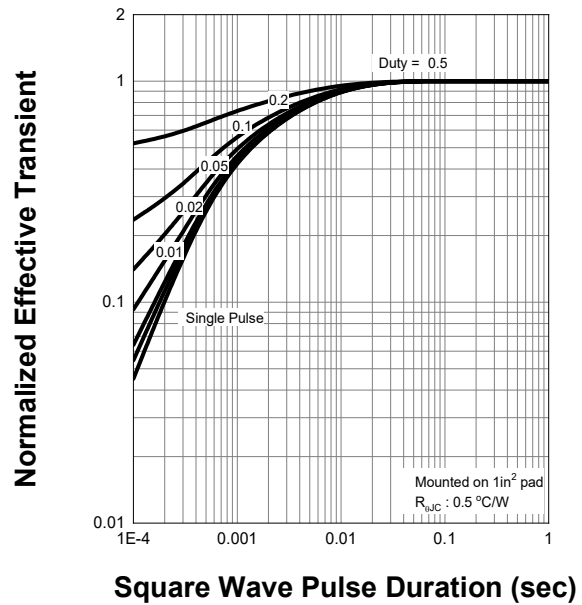
Current Capability



Safe Operating Area

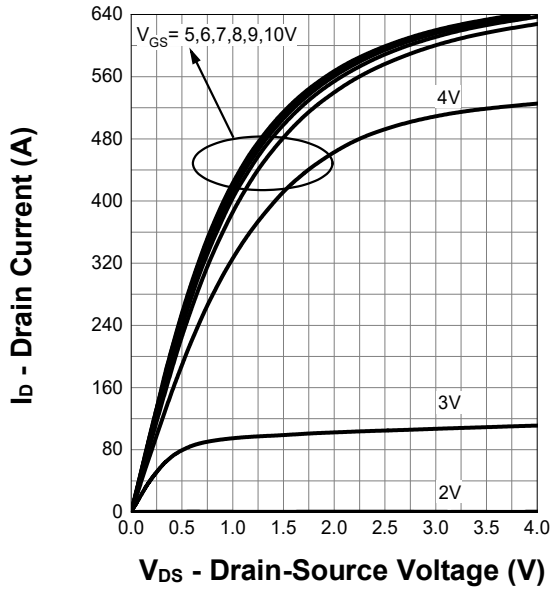


Transient Thermal Impedance

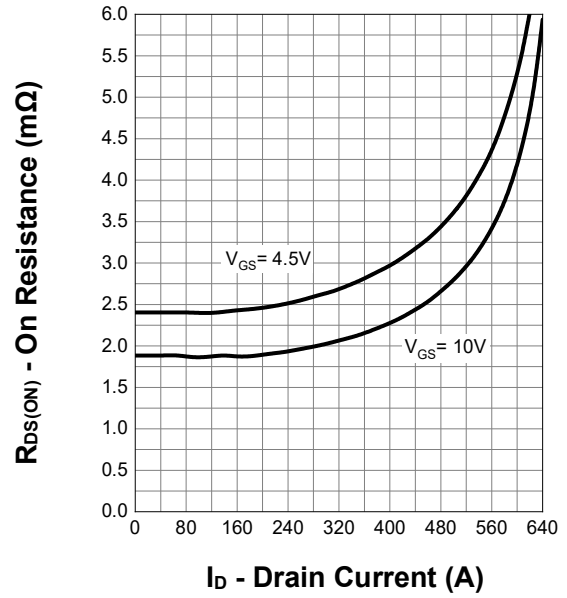


■ TYPICAL CHARACTERISTICS(Cont.)

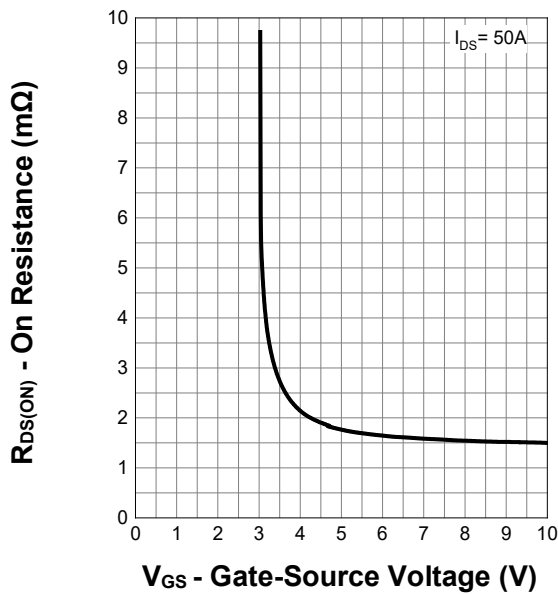
Output Characteristics



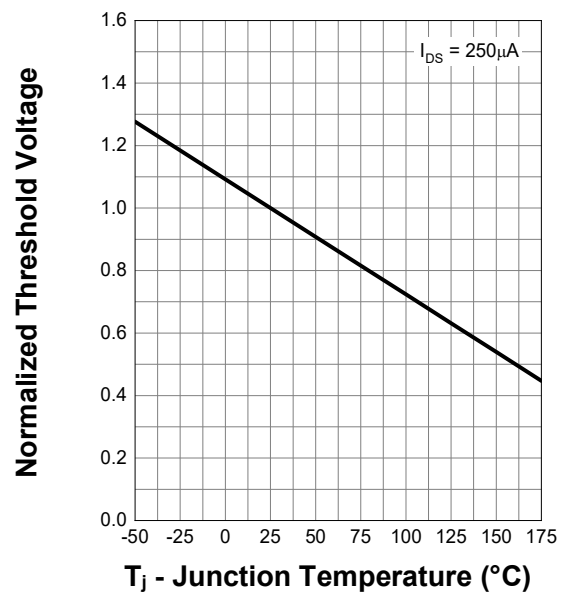
On Resistance



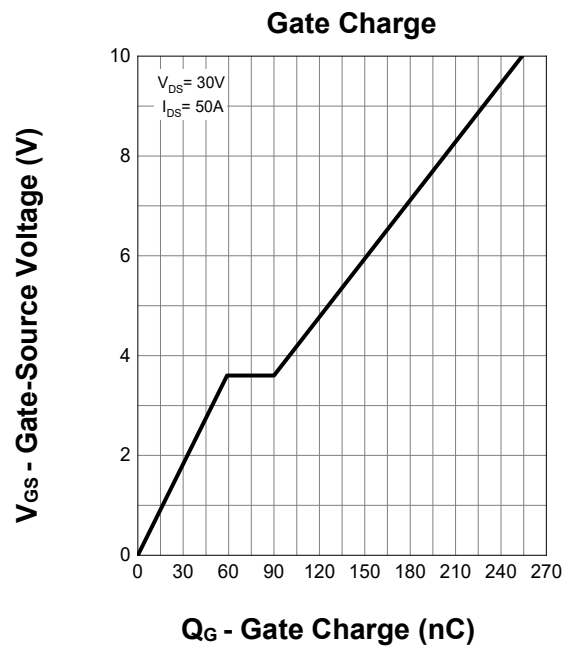
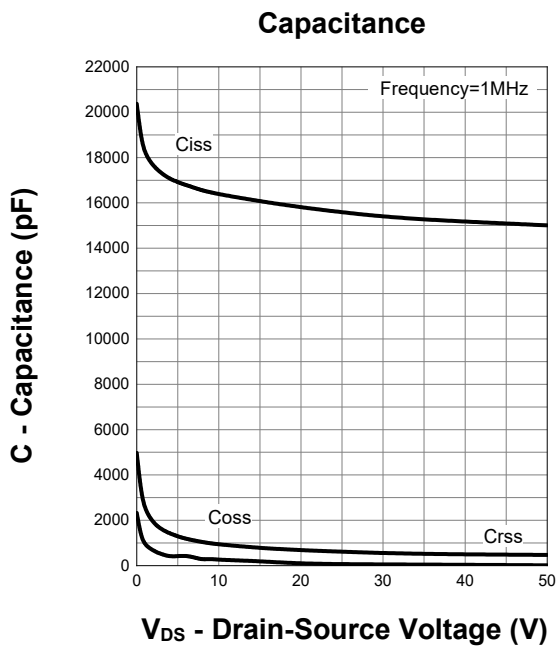
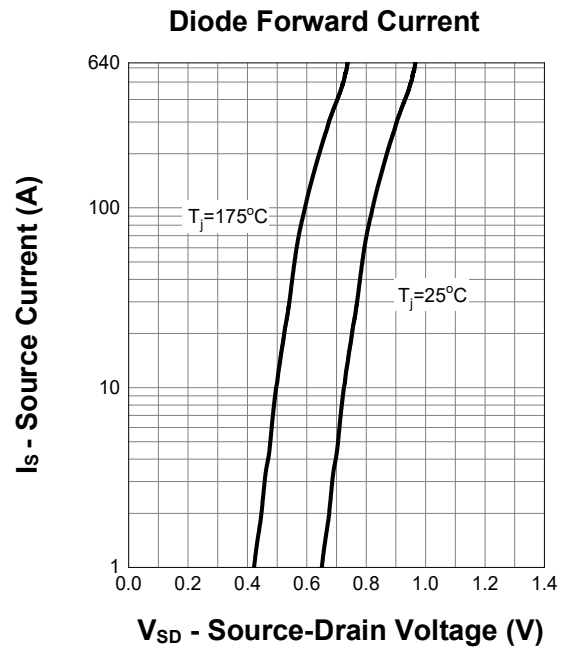
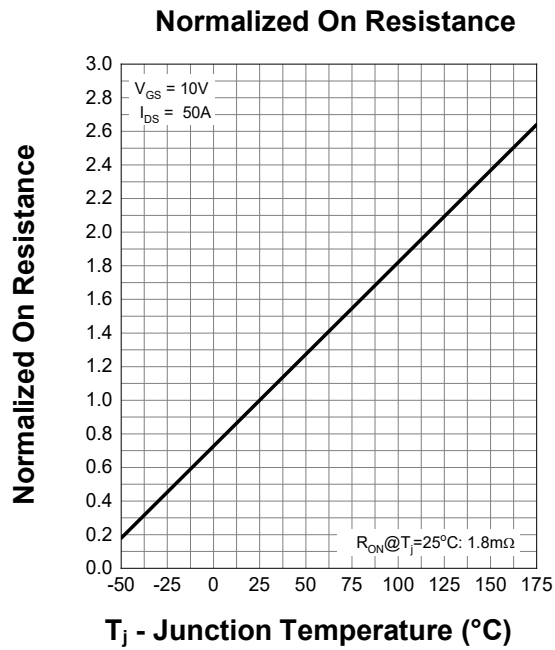
Transfer Characteristics



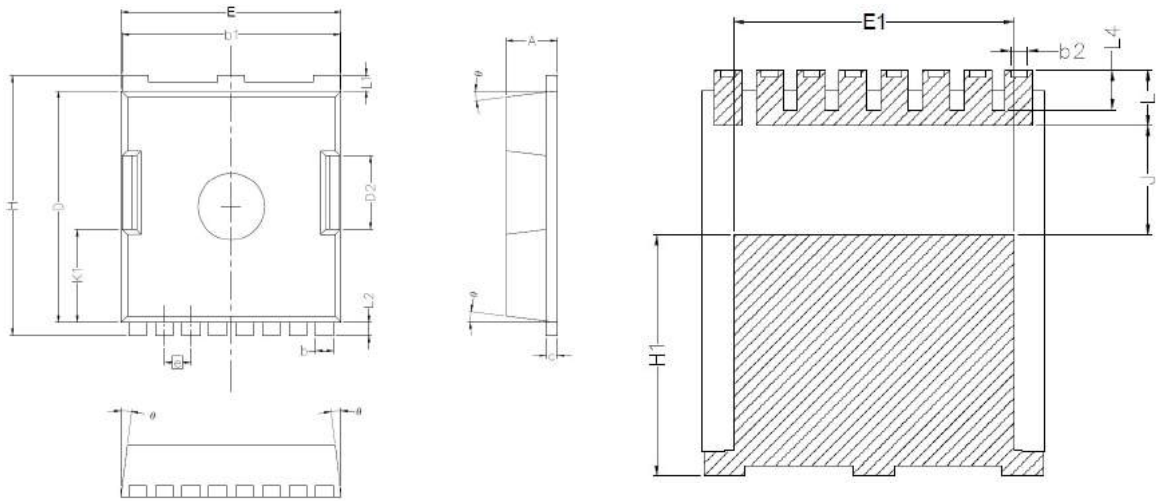
Normalized Threshold Voltage



■ 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
θ	4°	10°

- The information contained in this Surface-mounted package Advanced trench cell design Super trench herein is subject to change without notice.
- GUANGDONG INMARK ELECTRONICS CO. LTD(MOT) exerts the greatest possible effort to ensure high quality and reliability. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing MOT products, to comply with the standards of safety in making a safe design for the entire system, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue. In developing your designs, please ensure that MOT products are used within specified operating ranges as set forth in the most recent MOT products specifications.
- The MOT products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These MOT products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of MOT products listed in this document shall be made at the customer's own risk.
- Thank you for your interest in Renmao Electronics. If you need any business inquiries, please contact us.
- Shenzhen Headquarters:
19th Floor, Shencheng Investment Center Building, Guiyuan Street, Luohu District, Shenzhen
E-mail:sales@mot-mos.com

Shenzhen Base:

Renmao Industrial Park, No. 2 Songgang Avenue, Bao'an District, Shenzhen

Jiangsu base:

Hongshi Intelligent Industrial Park, No. 33, the Taihu Lake Road, Tinghu District, Yancheng City

Taipei Design Center:

10th Floor, No. 107, Section 1, Chengde Road, Taipei

Nanjing Design Center:

Block B, Tianyu Xi'an Garden, No. 688 Longmian Avenue, Jiangning District