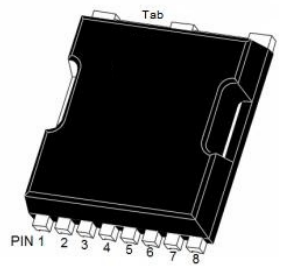
■ PRODUCT CHARACTERISTICS

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



TOLL-8L

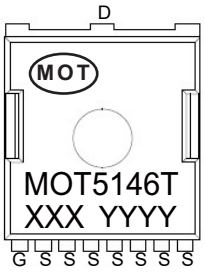
■ FEATURES

Surface-mounted package Advnced terch cell design Super trench

■ APPLICATIONS

High power system inverter
Light electric wehicles
BMS
Drones

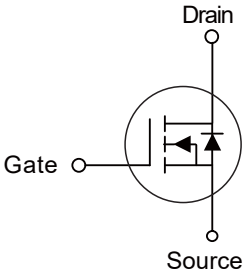
Pin configuration (Top view)



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 ℃	120	-	V
Gate-Source Voltage	V_{GS}	T_C = 25 ℃	-	±20	V
Drain Current (DC) *	I_D	T_C = 25 ℃, V_{GS} = 10 V	-	250	A
		T_C = 100 ℃, V_{GS} = 10 V	-	177	A
Drain Current (Pulsed) ***	I_{DM}	T_C = 25 ℃, V_{GS} = 10 V	-	396	A
Drain power dissipation	P_{tot}	T_C = 25 ℃	-	375	W
Storage Temperature	T_{stg}		-55	175	℃
Junction Temperature	T_J		-	175	℃
Continuous-Source Current	I_S	T_C = 25 ℃	-	250	A
Single Pulsed Avalanche Energy	E_{AS}	V_{DD}= 50V , L= 1.0 mH	-	922	mJ
Thermal Resistance- Junction to Ambient**	$R_{\theta JA}$		-	40	℃/W
Thermal Resistance- Junction to Case**	$R_{\theta JC}$		-	0.45	℃/W

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

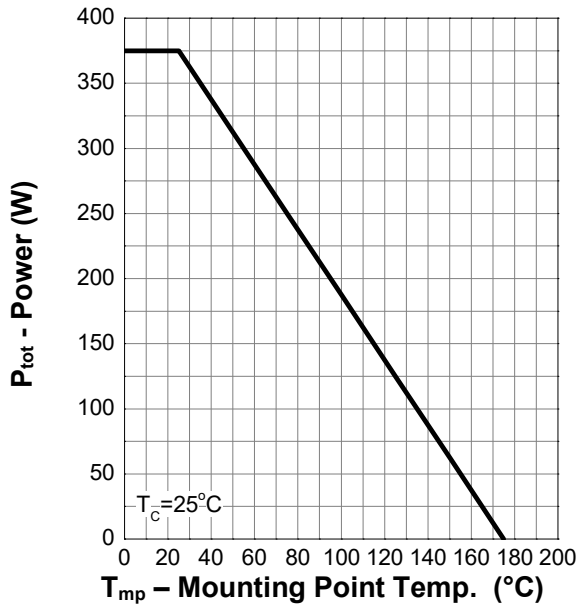
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_{DS} = 250 μA	120	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_{DS} = 250 μA	2	-	4	V
Drain Leakage Current	I_{DSS}	V_{DS} = 96 V, V_{GS} = 0 V	-	-	1	μA
Gate 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	mΩ
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	-	pF
Reverse Transfer Capacitance[b]	C_{rss}		-	34	-	pF
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	-	nS
Turn-off Delay Time	t_d (off)		-	51	-	nS
Turn-off Fall Time	t_f		-	27	-	nS
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	-	nC
Gate-Drain Charge	Q_{gd}		-	18	-	nC

Notes：

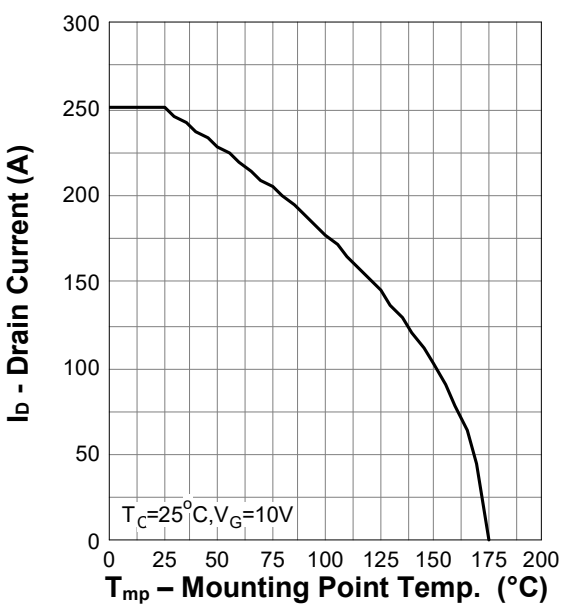
* Pulse width ≤ 300 μs, duty cycle ≤ 2 %
** Surface Mounted on minimum footprint pad area.
*** Limited by bonding wire
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%
b : Guaranteed by design, not subject to production testing

■ TYPICAL CHARACTERISTICS

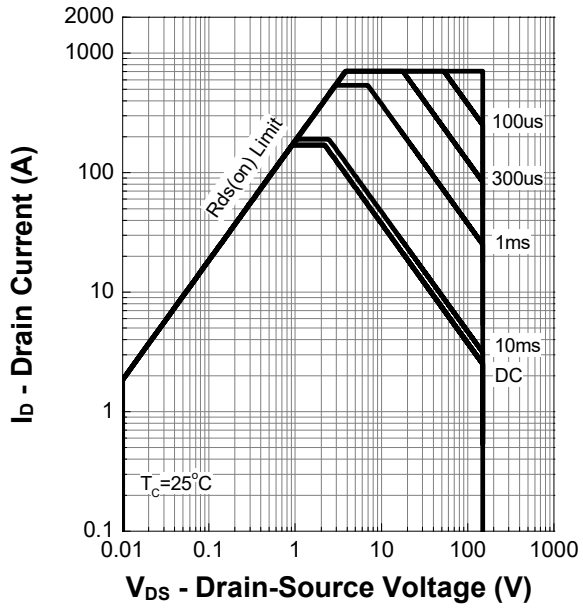
Power Capability



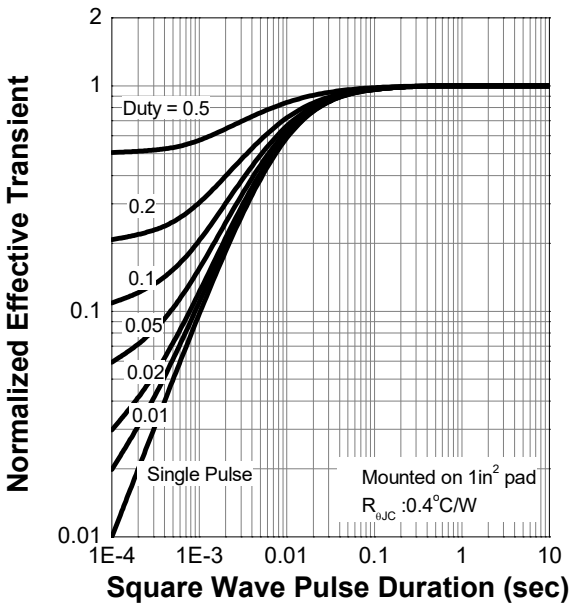
Current Capability



Safe Operating Area

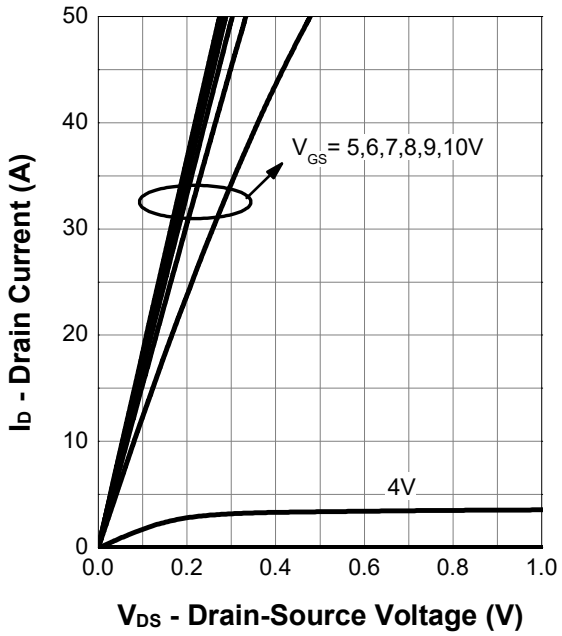


Transient Thermal Impedance

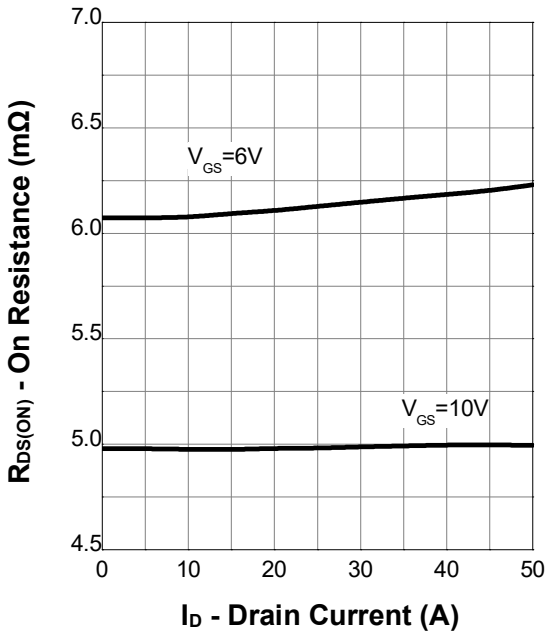


■ TYPICAL CHARACTERISTICS(Cont.)

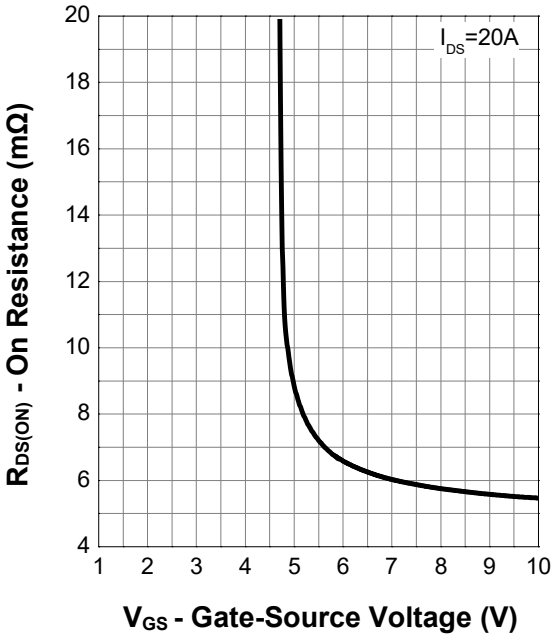
Output Characteristics



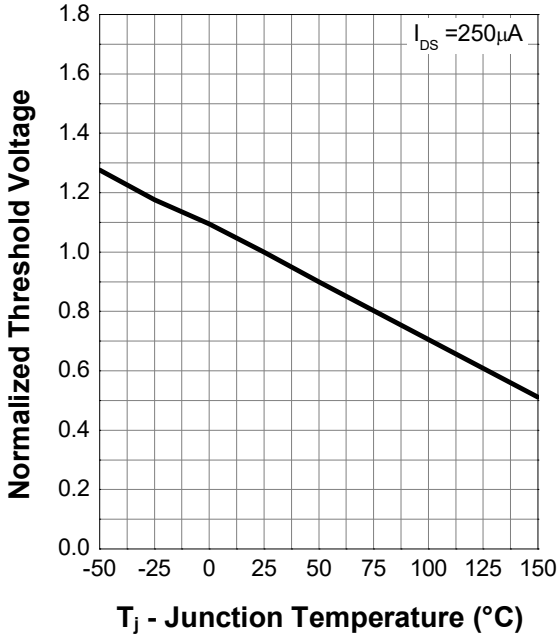
On Resistance



Transfer Characteristics

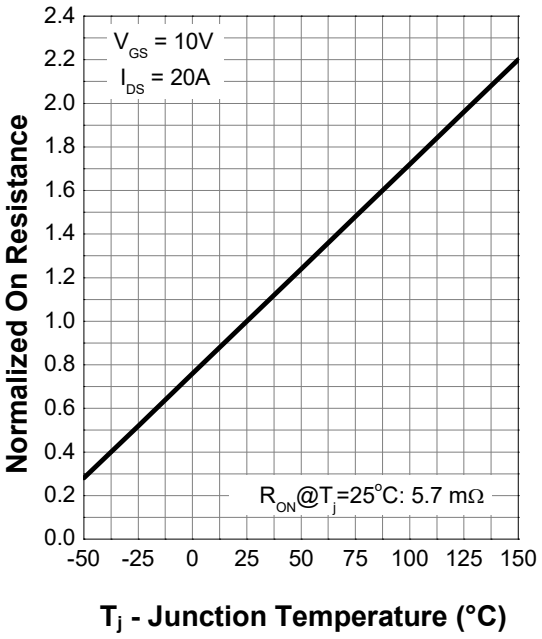


Normalized Threshold Voltage



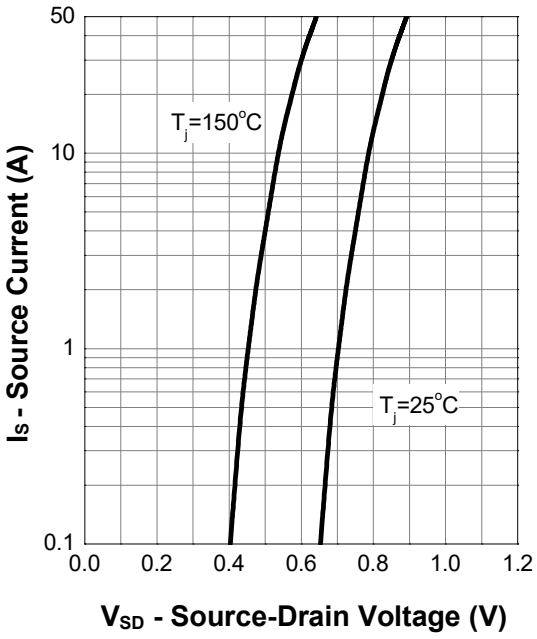
■ TYPICAL CHARACTERISTICS(Cont.)

Normalized On Resistance



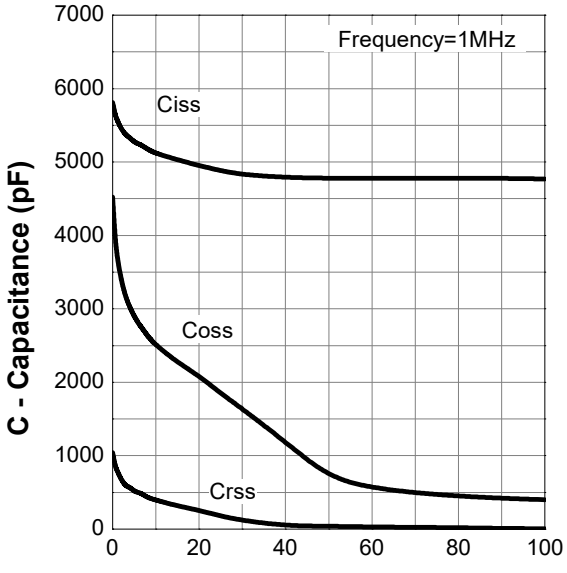
T_j - Junction Temperature (°C)

Diode Forward Current



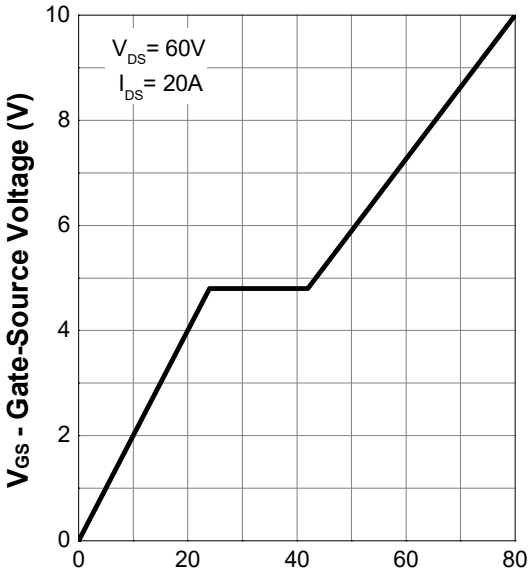
V_{SD} - Source-Drain Voltage (V)

Capacitance



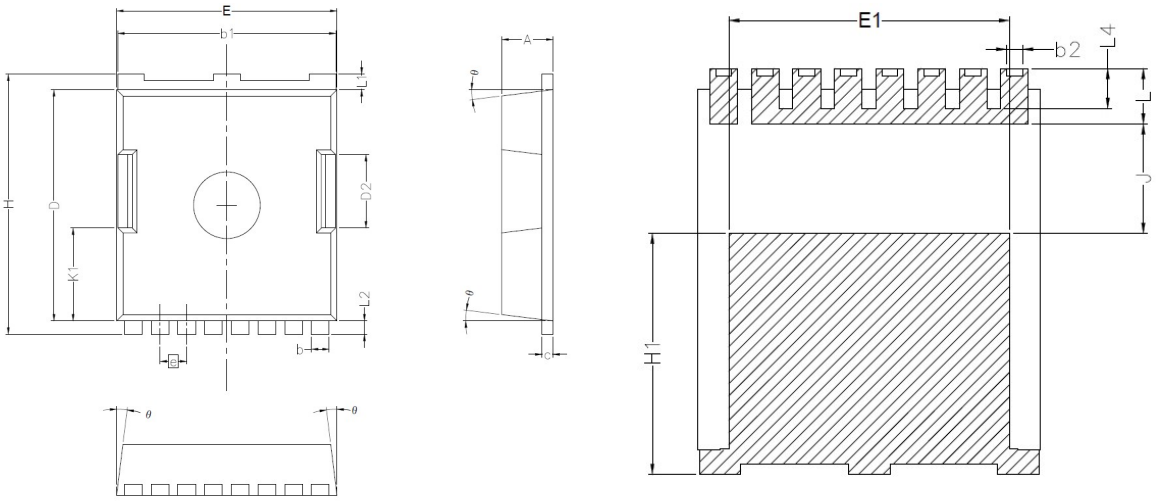
V_{DS} - Drain-Source Voltage (V)

Gate Charge



Q_G - Gate Charge (nC)

■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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