

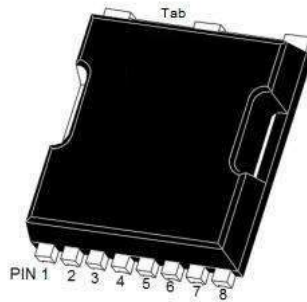
### Features

- Uses MOT advanced double trench technology
- Low On-Resistance (  $R_{DS(on)} \leq 22m\Omega$  )
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% avalanche tested
- Pb-free plating; RoHS compliant

### Applications

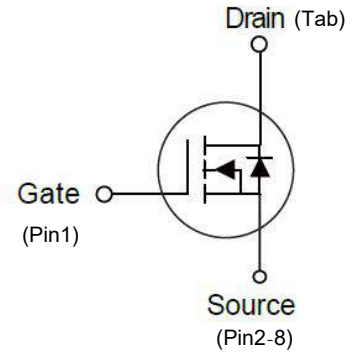
- Battery management
- Motor control and drive
- Synchronous rectification
- Switching applications

### Pin configuration (Top view)



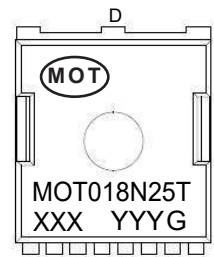
TOLL-8

### Symbol



### Key Performance Parameters

Parameter	Value	Unit
$V_{DS}$	250	V
$R_{DS(on),typ.}$	19	mΩ
$I_D$	90	A



G S S S S S S  
 XXX=Lot Number  
 YYY=Year Week  
 G=Vth Range

### Marking

### Ordering information

Type/Ordering Code	Package	Marking	Packing&Qty.(pcs)
MOT018N25T	TOLL-8	MOT018N25T	2000/Reel

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	250	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	90	A
Drain Current-Continuous( $T_C=100^\circ\text{C}$ )	$I_D(100^\circ\text{C})$	63.6	A
Pulsed Drain Current	$I_{DM}$	360	A
Maximum Power Dissipation	$P_D$	330	W
Single pulse avalanche energy	$E_{AS}$	1700	mJ
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.45	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 175	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	250	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=250V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=45A$	-	19	22	m $\Omega$
Gate resistance	$R_G$		-	1.6	-	$\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=5A$	10	-	-	S
<b>Dynamic characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	7000	-	PF
Output Capacitance	$C_{oss}$		-	2500	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	1700	-	PF
<b>Switching characteristics</b>						
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=125V, I_D=45A$ $V_{GS}=10V, R_G=4.7\Omega$	-	19.5	-	nS
Turn-on Rise Time	$t_r$		-	28	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	48	-	nS
Turn-Off Fall Time	$t_f$		-	15	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=125V, I_D=45A,$ $V_{GS}=10V$	-	90.9	-	nC
Gate-Source Charge	$Q_{gs}$		-	40.4	-	nC
Gate-Drain Charge	$Q_{gd}$		-	18	-	nC
<b>Drain-source diode characteristics</b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=90A$	-	-	1.2	V
Diode Forward Current	$I_S$		-	-	90	A
Reverse Recovery Time	$t_{rr}$	$T_J = 25^\circ\text{C}, I_F = 45A$ $di/dt = 100A/\mu s$	-	186	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	1.35	-	$\mu C$

■ TYPICAL CHARACTERISTICS

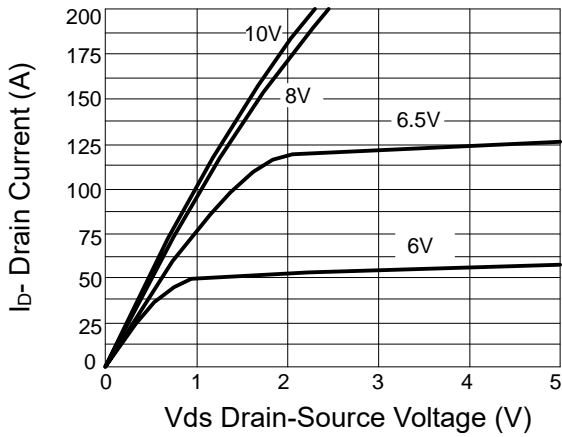


Figure 1 Output Characteristics

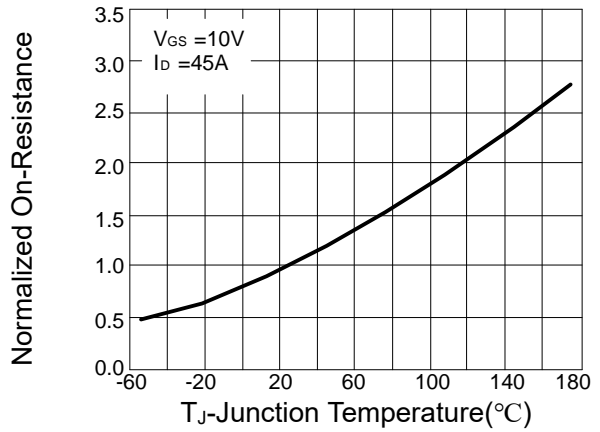


Figure 2  $R_{dson}$ -Junction Temperature

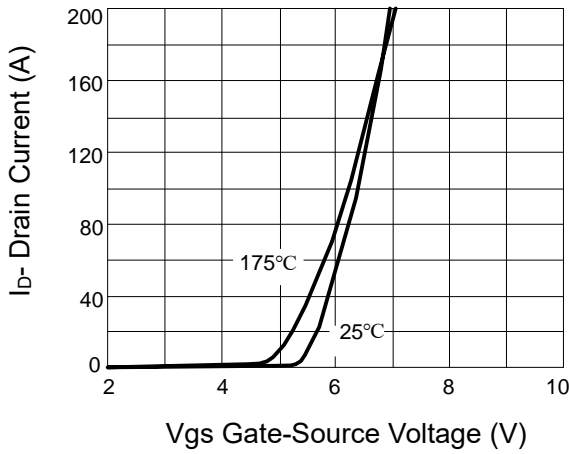


Figure 3 Transfer Characteristics

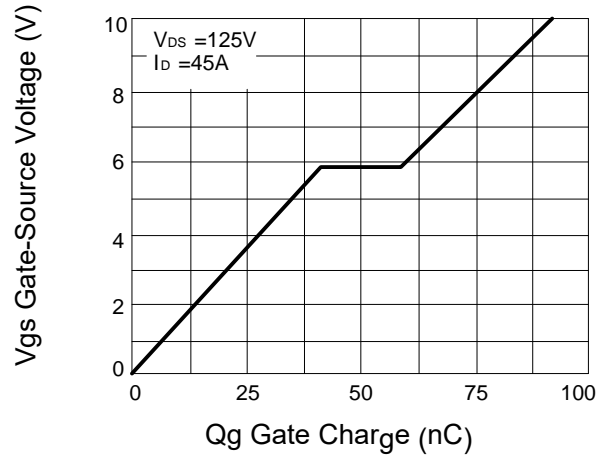


Figure 4 Gate Charge

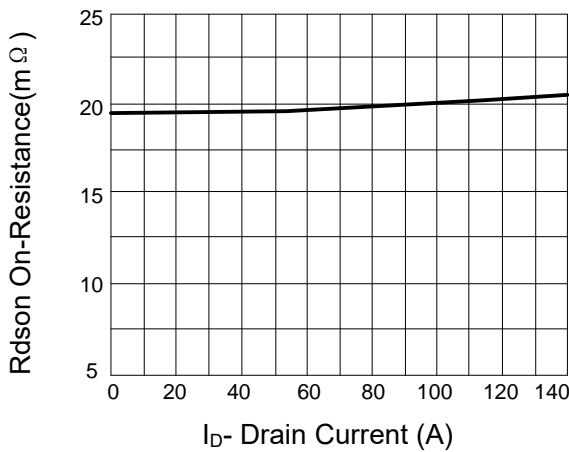


Figure 5  $R_{dson}$ - Drain Current

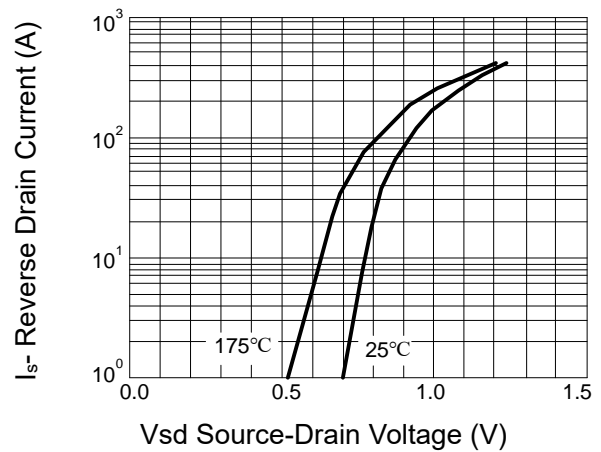


Figure 6 Source- Drain Diode Forward

■ TYPICAL CHARACTERISTICS(Cont.)

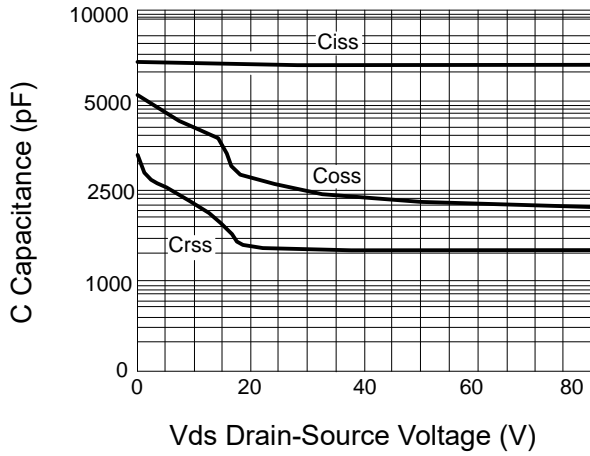


Figure 7 Capacitance vs Vds

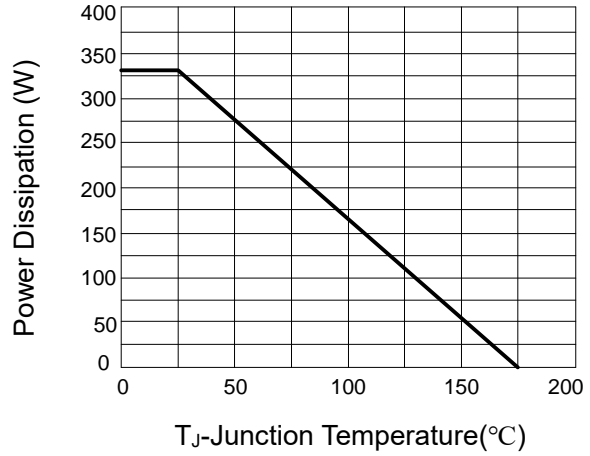


Figure 8 Power De-rating

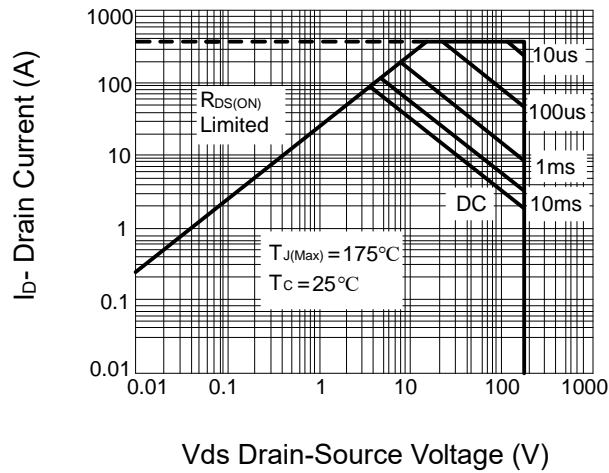


Figure 9 Safe Operation Area

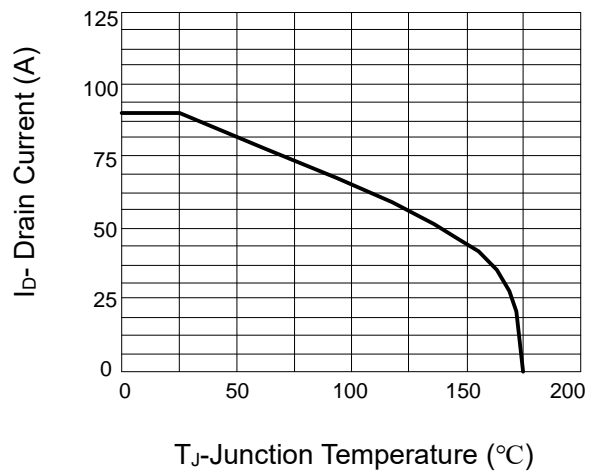
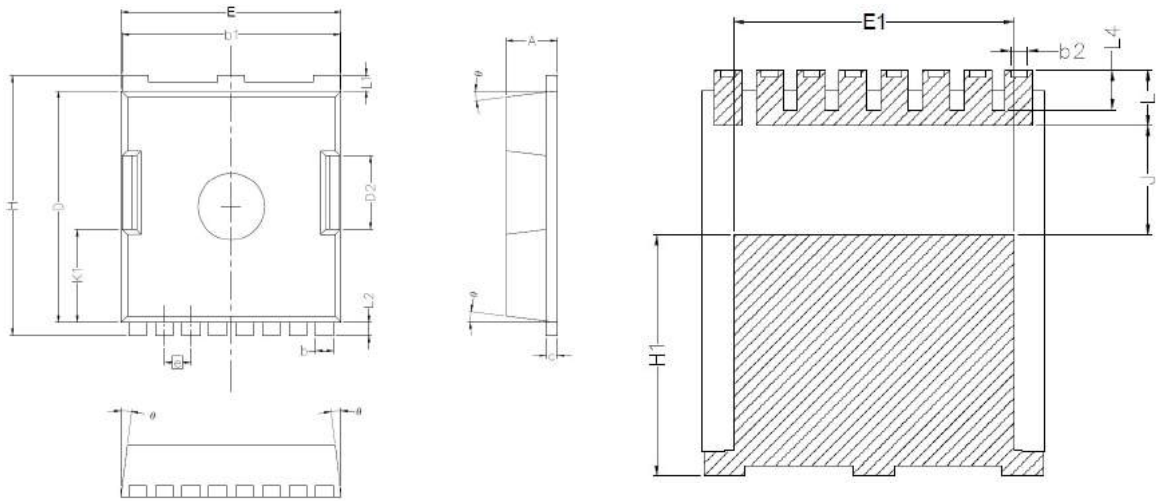


Figure 10 Current De-rating

■ 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 hSurface-mounted package Advnced terch cell design Super trencherein is subject to change without notice.
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