

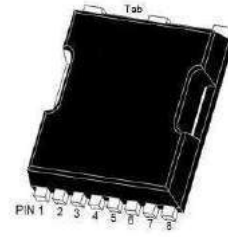
Features

- Uses MOT advanced double trench technology
- Low On-Resistance ($R_{DS(on)} \leq 1.2m\Omega$)
- Low Gate Charge
- Low Reverse transfer capacitances
- 100% avalanche tested
- Pb-free plating; RoHS compliant

Applications

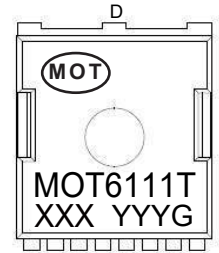
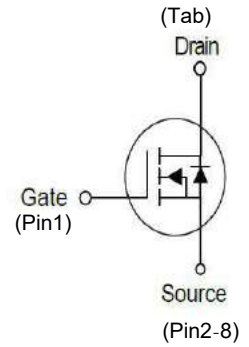
- Battery management
- Motor control and drive
- Synchronous rectification
- Switching applications

Pin configuration (Top view)



TOLL-8

Symbol



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

Marking

Key Performance Parameters

Parameter	Value	Unit
V_{DS}	60	V
$R_{DS(on),typ.}$	1.1	mΩ
I_D	300	A

Ordering information

Type/Ordering Code	Package	Marking	Packing&Qty.(pcs)
MOT6111T	TOLL-8	MOT6111T	2000/Reel

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

Parameter	Symbol	Conditions	Min	Max	Unit
Drain-Source Voltage	V_{DS}	$T_C = 25^\circ\text{C}$	60	-	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
		$T_C = 100^\circ\text{C}, V_{GS} = 10\text{ V}$	-	225	A
Drain Current (Pulsed) ***	I_{DM}	$T_C = 25^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1200	A
Drain power dissipation	P_{tot}	$T_C = 25^\circ\text{C}$	-	350	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}	$V_{DD} = 50\text{V}, L = 1.0\text{ mH}$	-	2000	mJ
Thermal Resistance- Junction to Ambient**	$R_{\theta JA}$		-	42	$^\circ\text{C/W}$
Thermal Resistance- Junction to Case**	$R_{\theta JC}$		-	0.43	

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

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-Source Breakdown Voltage	$B V_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=150A$	-	1.1	1.2	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=10V, I_D=150A$	10	-	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	6500	-	pF
Output Capacitance	C_{oss}		-	1700	-	pF
Reverse Transfer Capacitance	C_{rss}		-	300	-	pF
Switching characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=150A$ $V_{GS}=10V, R_G=4.7\Omega$	-	19	-	nS
Turn-on Rise Time	t_r		-	31	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	58	-	nS
Turn-Off Fall Time	t_f		-	23	-	nS
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=150A,$ $V_{GS}=10V$	-	129	-	nC
Gate-Source Charge	Q_{gs}		-	40.6	-	nC
Gate-Drain Charge	Q_{gd}		-	23.9	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=300A$	-	-	1.2	V
Diode Forward Current	I_S		-	-	300	A
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}\text{C}, I_F = 150A$ $di/dt = 100A/\mu s$	-	67	-	nS
Reverse Recovery Charge	Q_{rr}		-	112	-	nS

■ TYPICAL CHARACTERISTICS

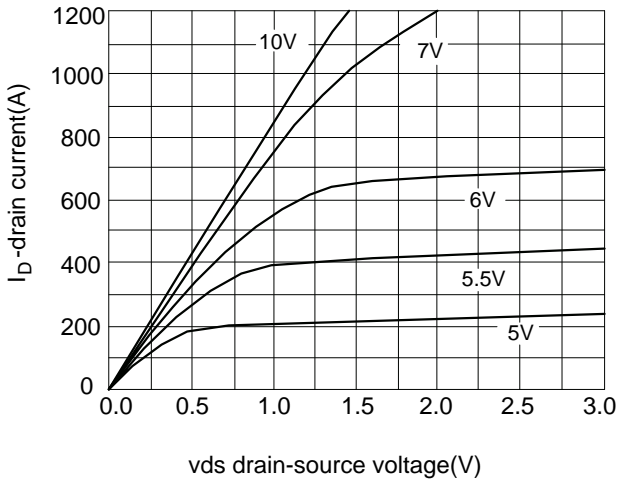


Fig.1 output characteristics

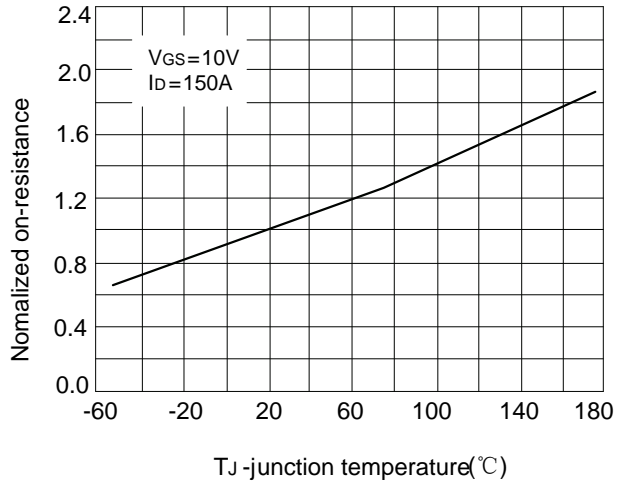


Fig.2 rdson-junction temperature

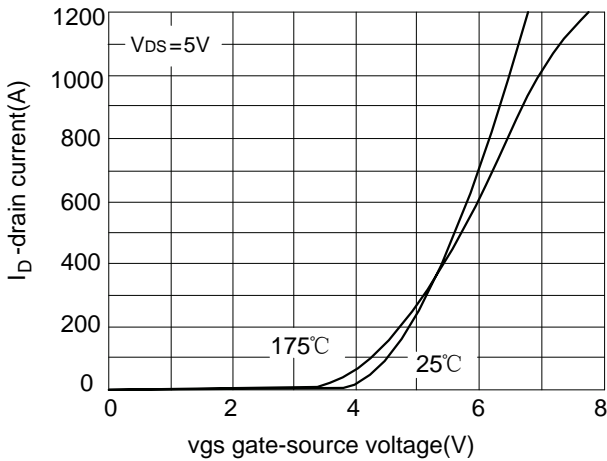


Fig.3 transfer characteristics

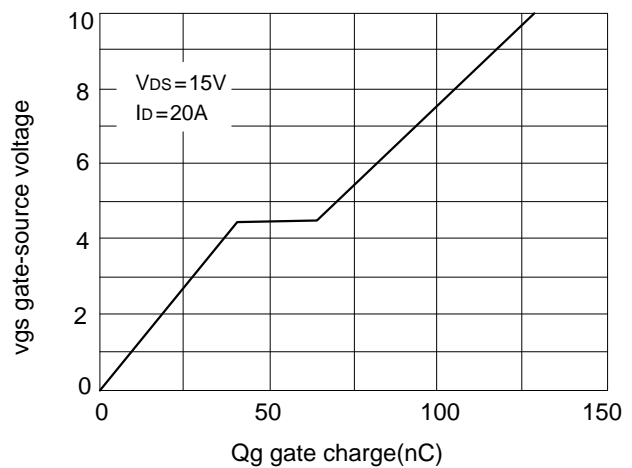


Fig.4 gate charge

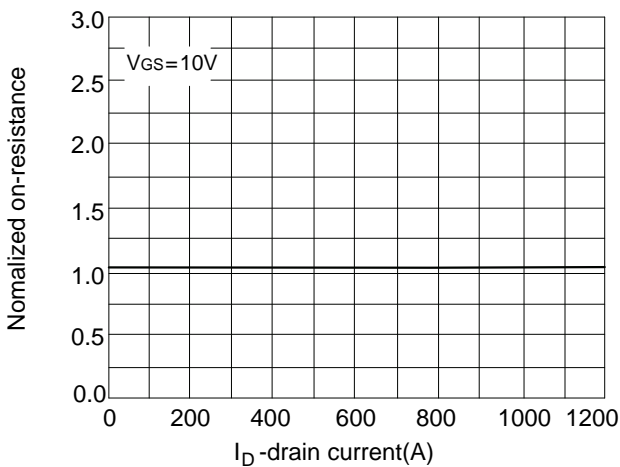


Fig.5 rdson-drain current

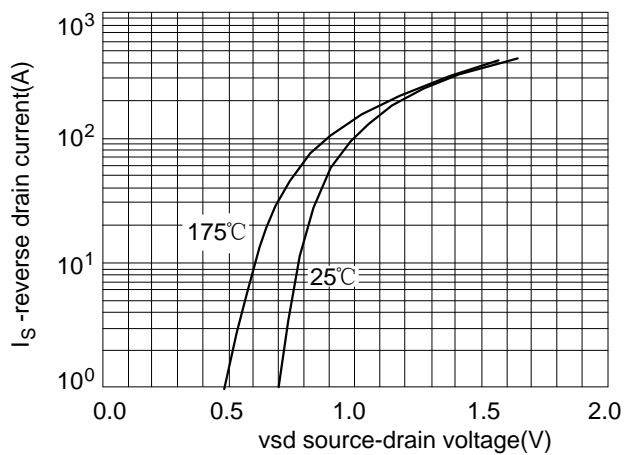
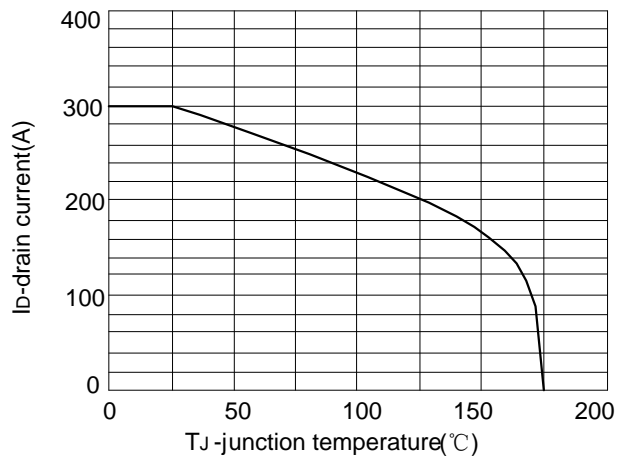
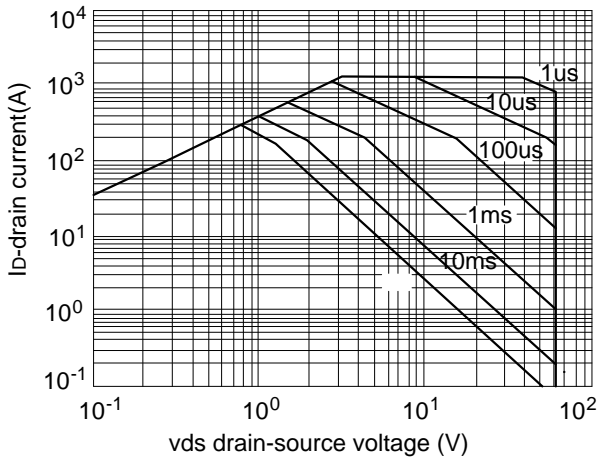
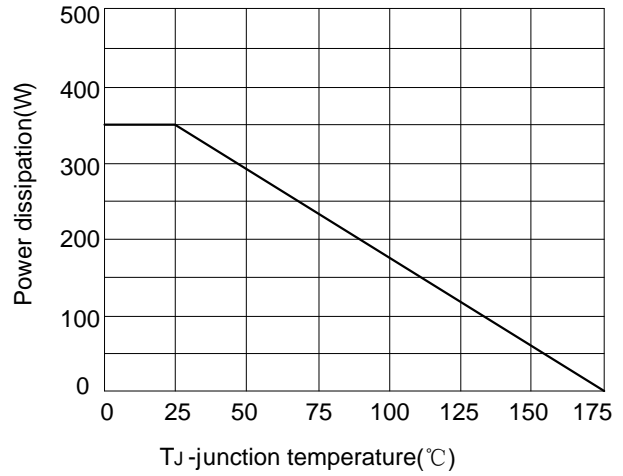
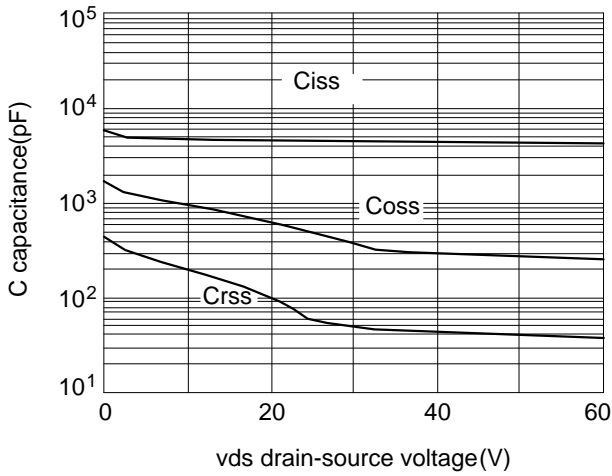
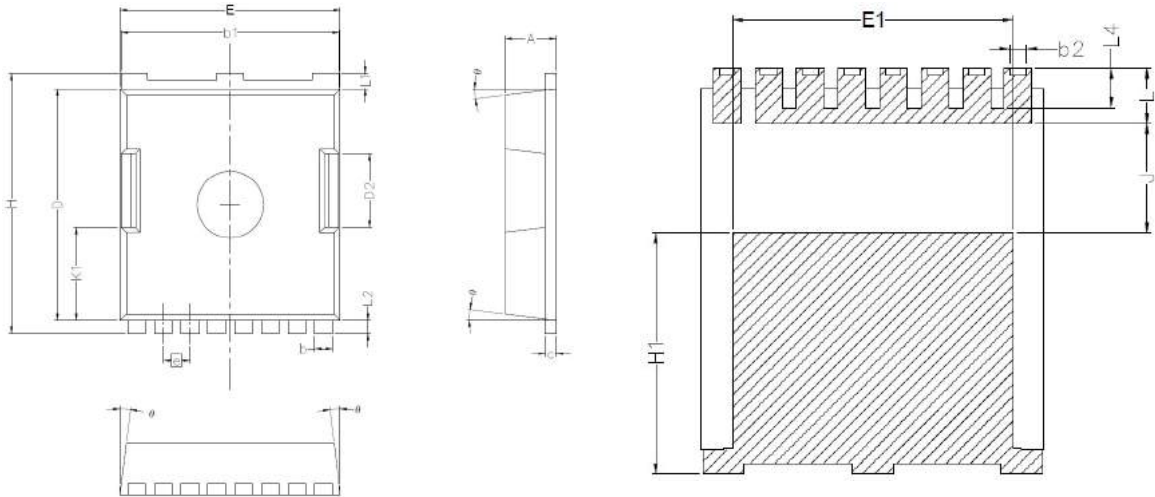


Fig.6 source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)



■ 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°

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