

## N-Channel Enhancement Mode MOSFET

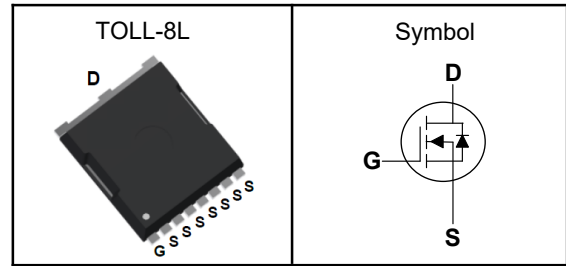
### Features

- High Speed Power Switching
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

### Applications

- Power Management in Desktop Computer
- DC/DC Converters

### Pin Description



$V_{DSS}$	150	V
$R_{DS(ON)-Typ}$	4.5	m $\Omega$
$I_D$	220	A

### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ , Unless Otherwise Noted)

Symbol	Parameter	Rating	Unit
$V_{DSS}$	Drain-Source Voltage	150	V
$V_{GSS}$	Gate-Source Voltage	$\pm 25$	V
$T_J$	Maximum Junction Temperature	-55 to 175	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to 175	$^\circ\text{C}$
$I_{DM}^{①}$	Pulse Drain Current Tested	680	A
$I_D$	Continuous Drain Current	220	A
$P_D$	Maximum Power Dissipation	375	W
$E_{AS}$	Avalanche Energy, Single pulse	1250	mJ

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	40	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.4	$^\circ\text{C/W}$

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150 $^\circ\text{C}$ .

Note ③ : Surface Mounted on 1in<sup>2</sup> FR-4 board with 1oz.



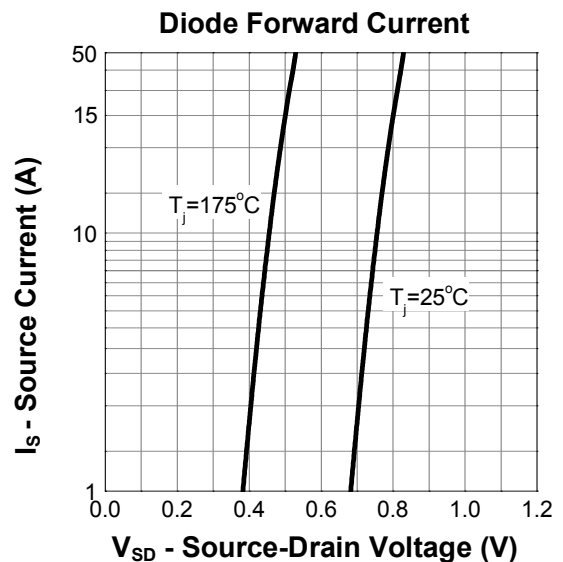
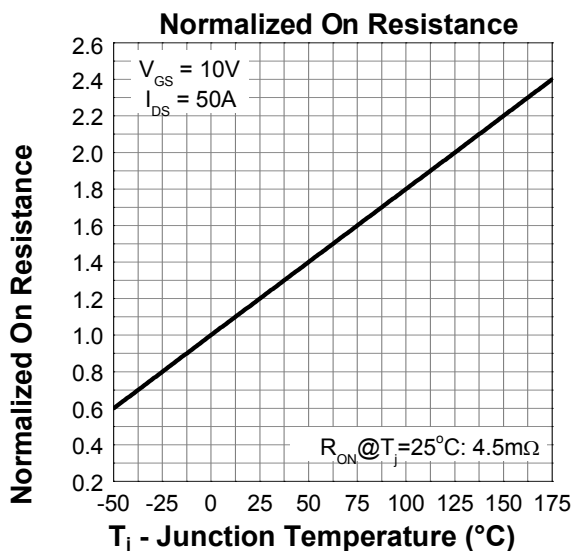
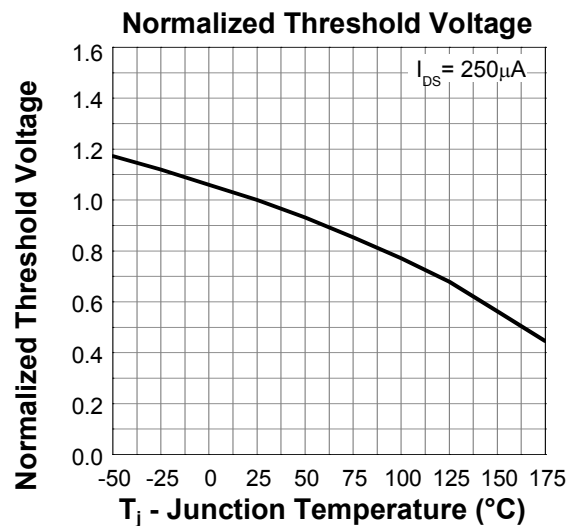
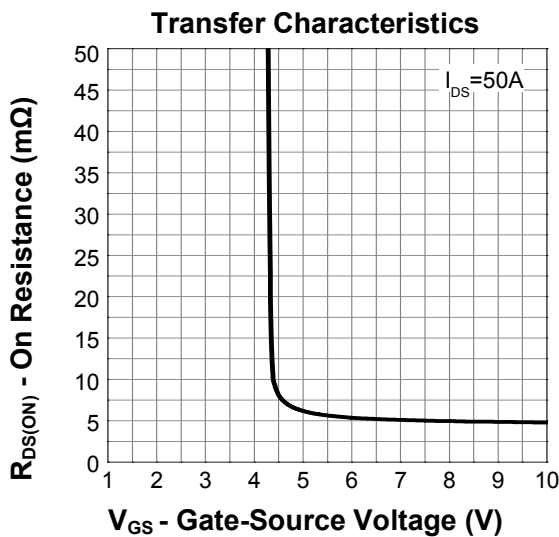
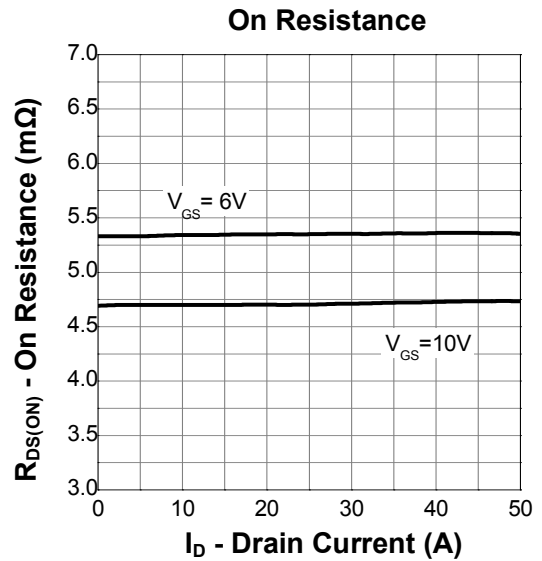
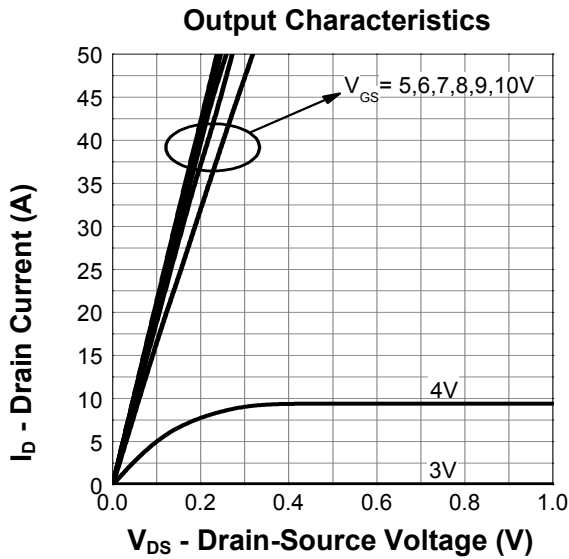
**N-Channel Enhancement Mode MOSFET**

**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$ , Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	150	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=120V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	---	4	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=50A$	---	4.5	5	m $\Omega$
		$V_{GS}=6V, I_D=25A$	---	5	6	m $\Omega$
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
$C_{iss}$	Input Capacitance	$V_{DS}=75V, V_{GS}=0V, \text{Freq.}=1\text{MHz}$	---	9320	---	pF
$C_{oss}$	Output Capacitance		---	570	---	
$C_{rss}$	Reverse Transfer Capacitance		---	60	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DS}=75V, V_{GS}=10V, I_D=50A, R_G=3.9\Omega$	---	24	---	nS
$T_r$	Turn-on Rise Time		---	70	---	
$T_{d(off)}$	Turn-off Delay Time		---	112	---	
$T_f$	Turn-off Fall Time		---	75	---	
$Q_g$	Total Gate Charge	$V_{DS}=75V, V_{GS}=10V, I_D=50A$	---	158	---	nC
$Q_{gs}$	Gate-Source Charge		---	48	---	
$Q_{gd}$	Gate-Drain Charge		---	39	---	
<b>Source-Drain Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$I_S=50A, V_{GS}=0V$	---	---	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_F=50A, V_{GS}=0V, di_F/dt=100A/\mu s$	---	115	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	480	---	nC

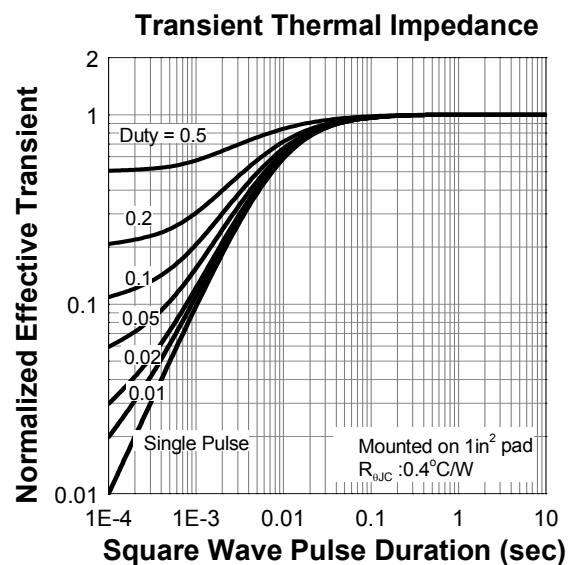
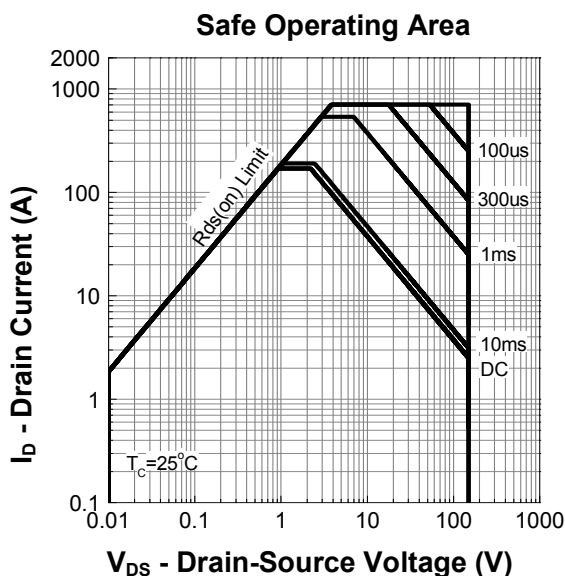
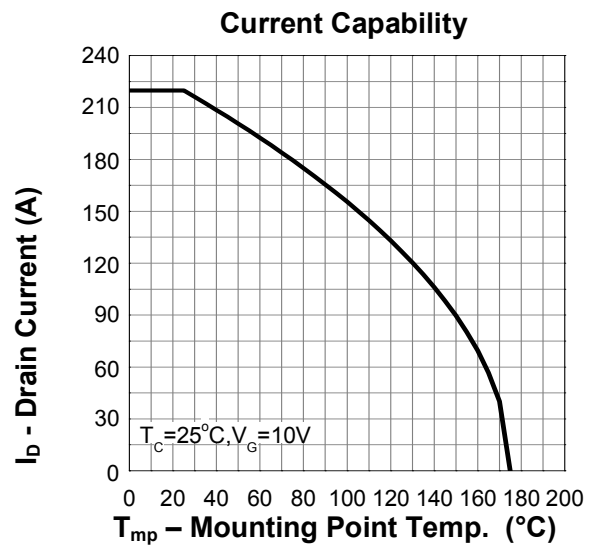
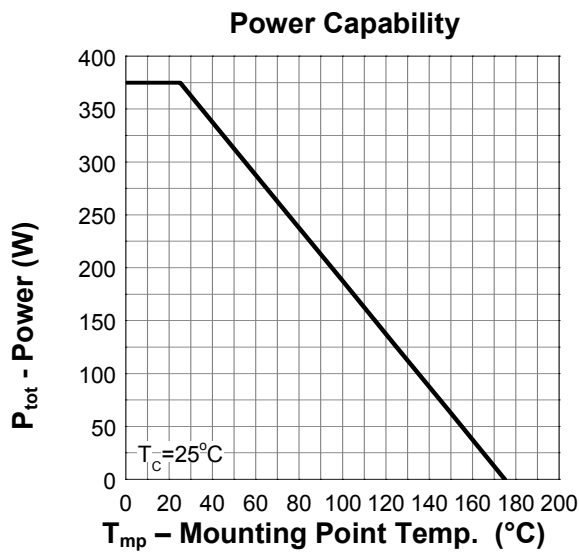
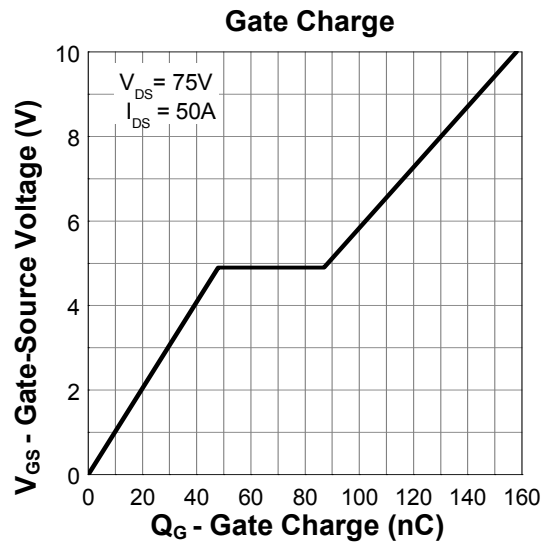
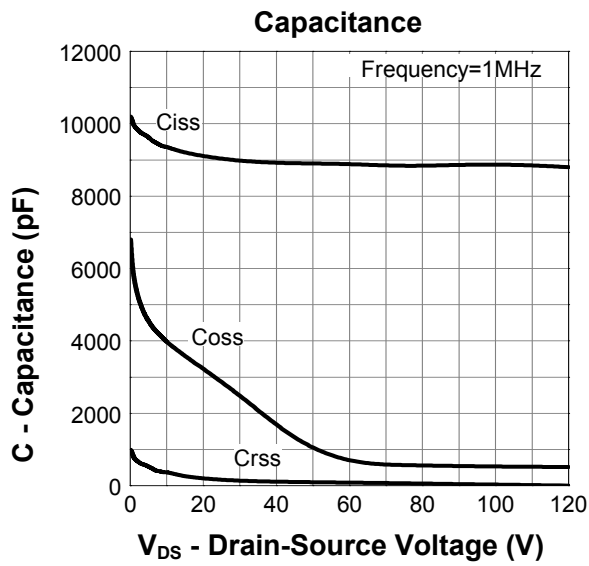
Note ④: Pulse test (pulse width $\leq 300\mu s$ , duty cycle $\leq 2\%$ ).

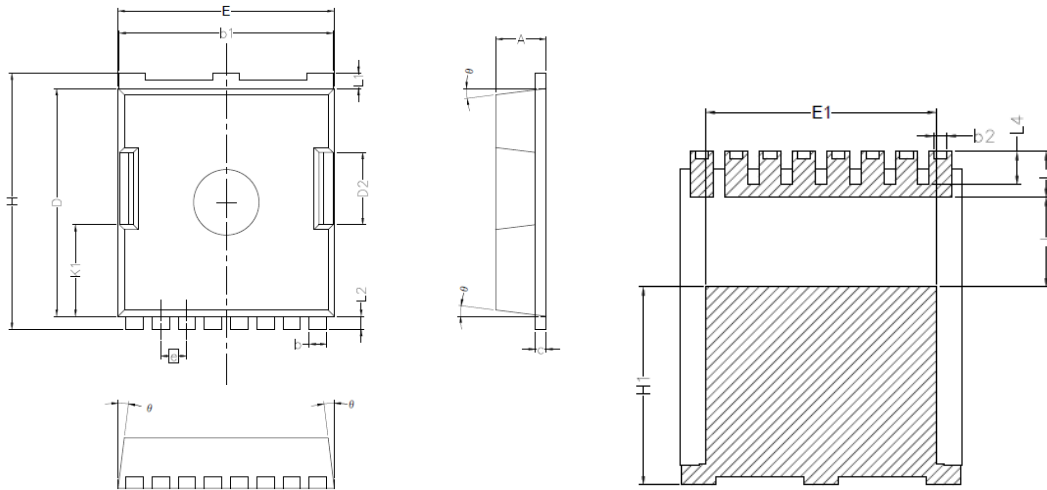
Note ⑤: Guaranteed by design, not subject to production testing.

**N-Channel Enhancement Mode MOSFET**
**Typical Characteristics**




**N-Channel Enhancement Mode MOSFET**



**N-Channel Enhancement Mode MOSFET**
**TOLL-8L Package Outline Data**


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	3.60
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
$\theta$	4°	10°