

## 24V Dual N-Channel Mosfet

### FEATURES

- $R_{SS(ON)}=7.8m\Omega(Typ.) @V_{GS}=4.5V$
- $R_{SS(ON)}=8.2m\Omega(Typ.) @V_{GS}=3.9V$
- $R_{SS(ON)}=9.7m\Omega(Typ.) @V_{GS}=2.5V$

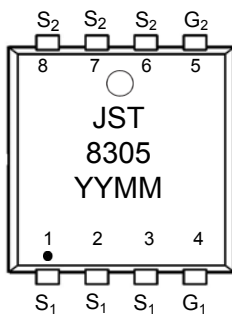
### TDFN3\*3-8L



### APPLICATIONS

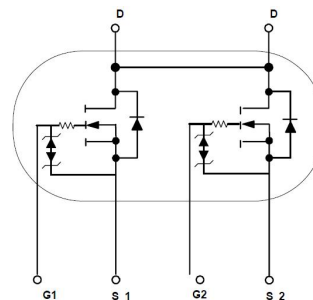
- Portable appliances
- Power management

### MARKING



YYMM:Date Code(year & month)

### N-CHANNEL MOSFET



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

Symbol	Parameter	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	24	-	V
$V_{GS}$	Gate-Source Voltage	-	$\pm 12$	V
$I_D$	Drain Current <sup>note1</sup> $V_{GS}=4.5V$	-	58	A
$I_{DM}$	Pulsed Drain Current <sup>note1,note2,note3</sup> $V_{GS}=4.5V$	-	100	A
$P_{tot}$	Total Power Dissipation <sup>note1</sup>	$T_C=25^{\circ}C$	31	W
		$T_C=100^{\circ}C$	12.4	
$T_{stg}$	Storage Temperature	- 55	150	$^{\circ}C$
$T_J$	Junction Temperature	-	150	$^{\circ}C$
$I_S$	Diode Forward Current <sup>note1</sup>	-	58	A
$R_{\theta JC}$	Thermal Resistance- Junction to Ambient <sup>note1</sup>	-	4	$^{\circ}C / W$

**MOSFET ELECTRICAL CHARACTERISTICS  $T_c=25\text{ }^\circ\text{C}$  unless otherwise specified**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$	24	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$	0.5	-	1.0	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
		$T_J = 85\text{ }^\circ\text{C}$	-	-	30	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0\text{ V}$	-	-	$\pm 10$	$\mu\text{A}$
$R_{SS(ON)}$	Static Source to Source On-Resistance <sup>note2</sup>	$V_{GS} = 4.5\text{ V}, I_{DS} = 8\text{ A}$	-	7.8	9.0	m $\Omega$
		$V_{GS} = 3.9\text{ V}, I_{DS} = 8\text{ A}$	-	8.2	9.7	
		$V_{GS} = 2.5\text{ V}, I_{DS} = 8\text{ A}$	-	9.7	11	
<b>Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage <sup>note2</sup>	$I_{SD} = 1\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
<b>Dynamic Characteristics<sup>note4</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 10\text{ V}$ $f = 1\text{ MHz}$	-	2322	-	pF
$C_{oss}$	Output Capacitance		-	300	-	
$C_{rss}$	Reverse Transfer Capacitance		-	277	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 10\text{ V}, V_{GEN} = 4.5\text{ V},$ $R_G = 6\text{ }\Omega, R_L = 3.3\text{ }\Omega,$ $I_{DS} = 3\text{ A}$	-	8.3	-	ns
$t_r$	Turn-on Rise Time		-	34.6	-	
$t_d(off)$	Turn-off Delay Time		-	406.7	-	
$t_f$	Turn-off Fall Time		-	189.8	-	
<b>Gate Charge Characteristics<sup>note4</sup></b>						
$Q_g$	Total Gate Charge	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_{DS} = 3\text{ A}$	-	41.1	-	nC
$Q_{gs}$	Gate-Source Charge		-	2.9	-	
$Q_{gd}$	Gate-Drain Charge		-	12.2	-	

Notes: 1. Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10\text{ sec}$

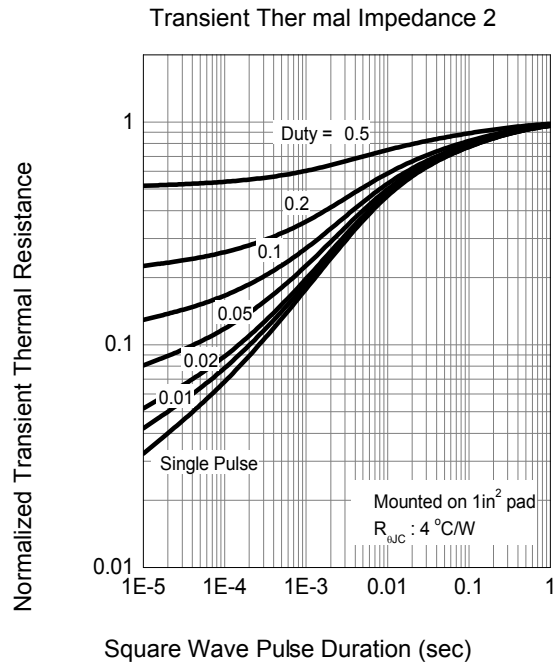
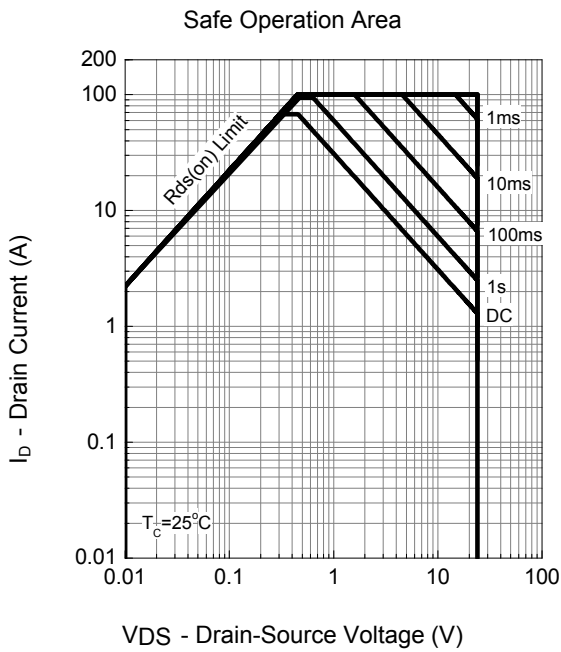
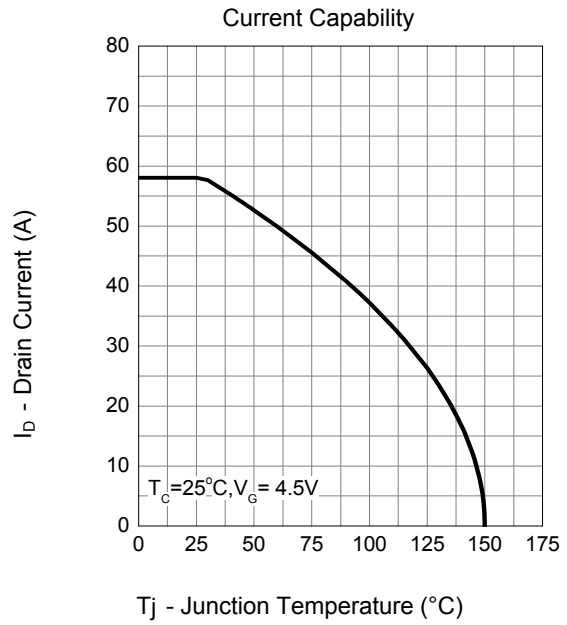
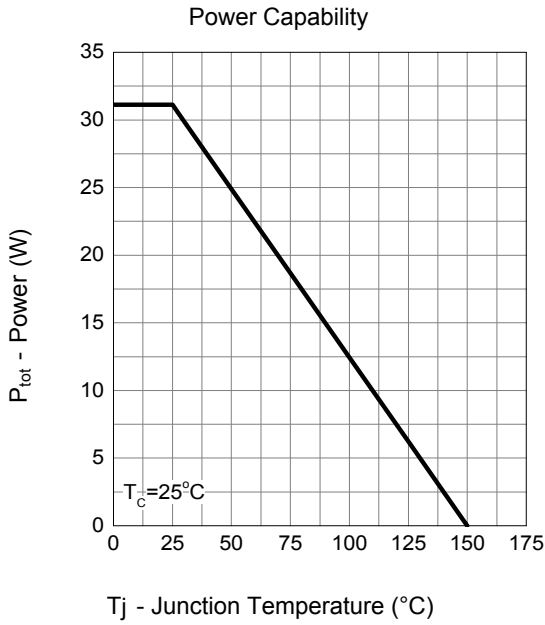
2. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$

3. limited by bonding wire

4. Guaranteed by design, not subject to production testing.

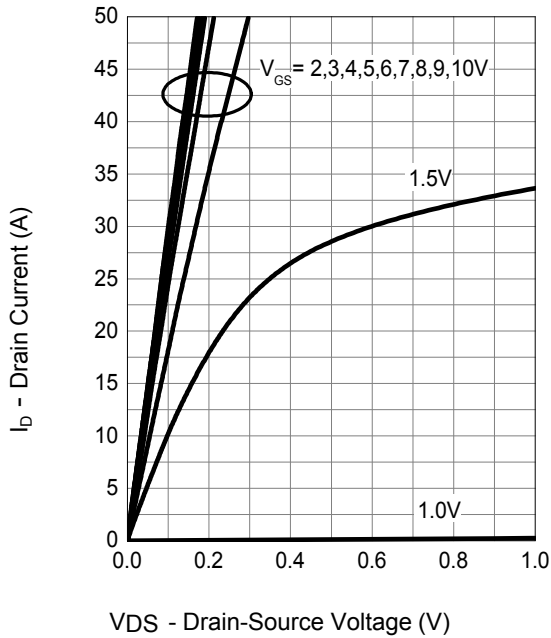
## Typical Characteristics

### N-channel:

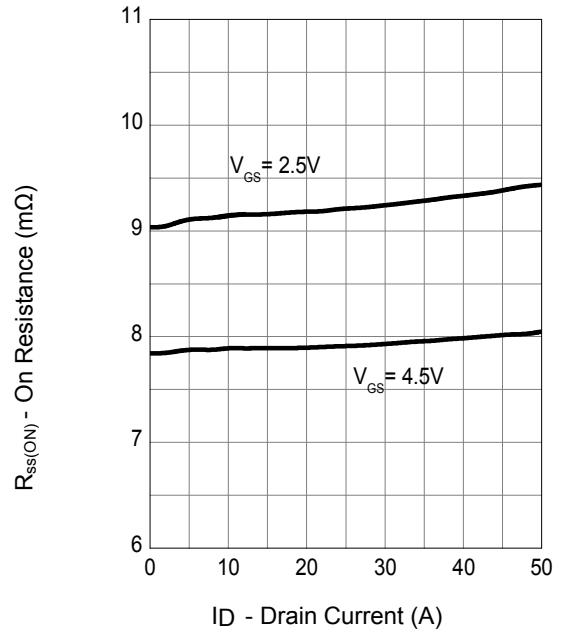


Typical Performance Characteristics (cont.)

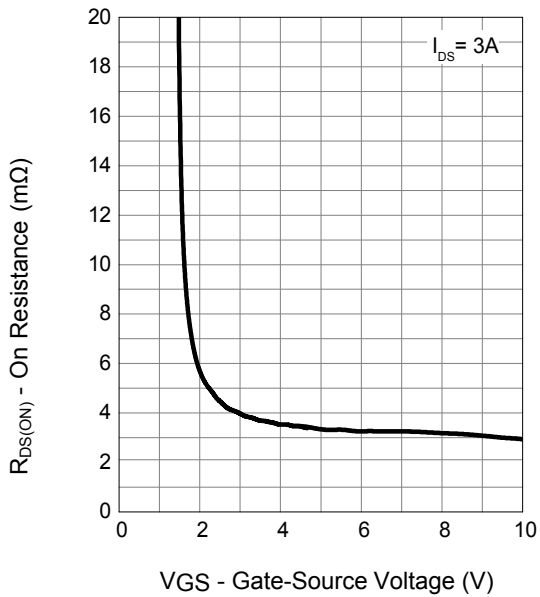
Output Characteristics



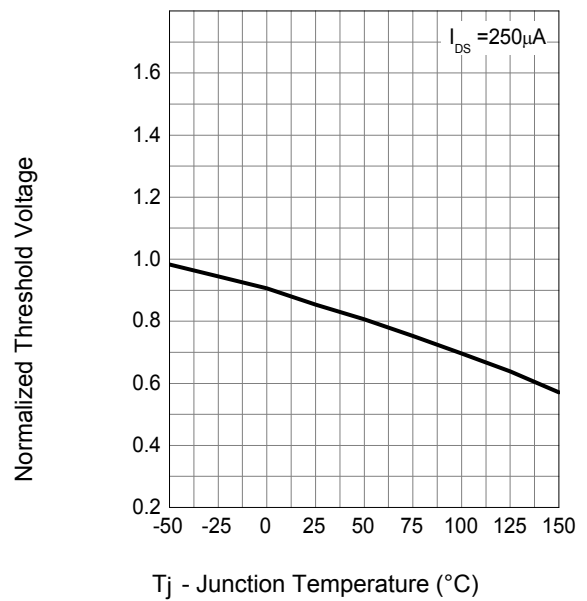
On Resistance



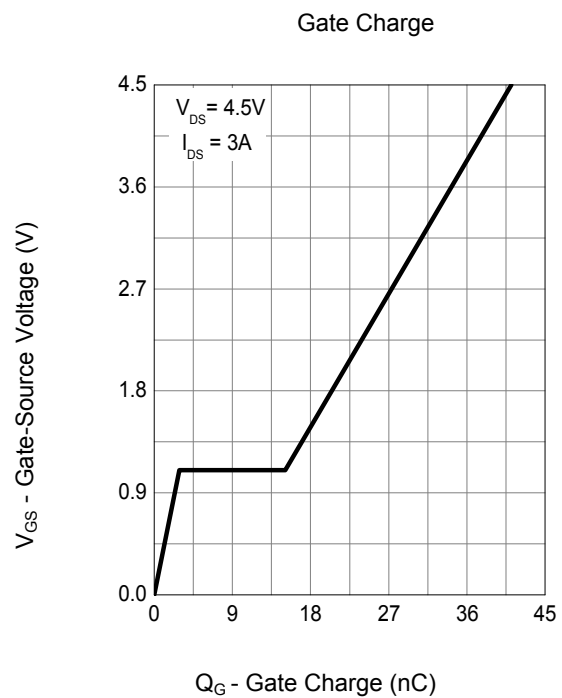
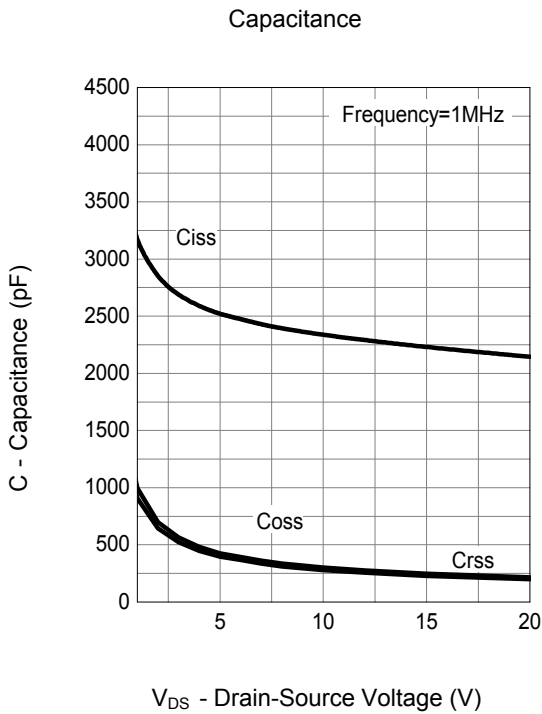
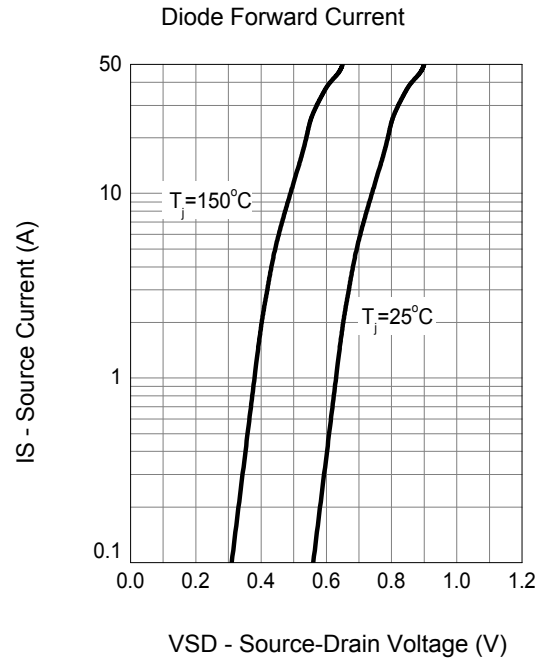
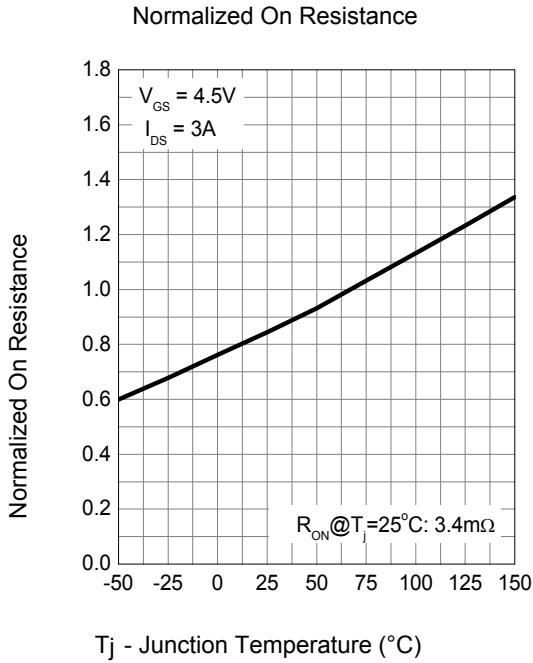
Transfer Characteristics



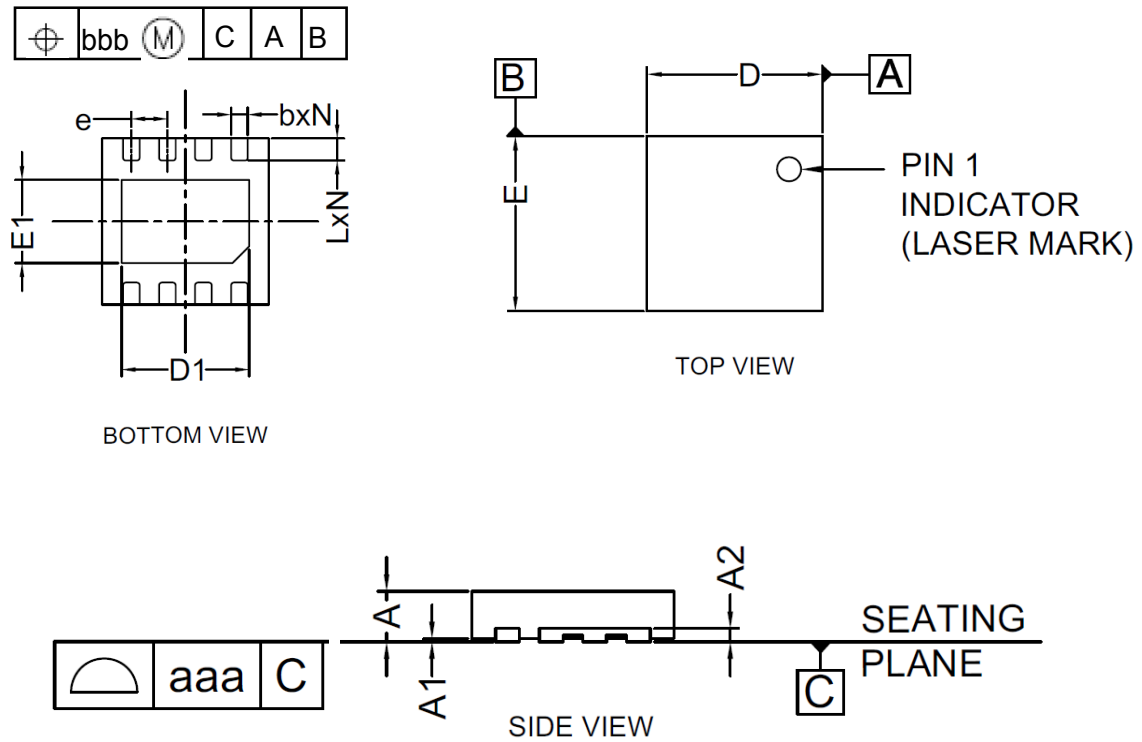
Normalized Threshold Voltage 1.8



## Typical Performance Characteristics (cont.)



## TDFN3\*3-8L PACKAGE OUTLINE DRAWING



### UNITS OF MEASURE=MILLIMETER

Symbol	Min	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.203		
b	0.25	0.30	0.35
D	2.924	3.00	3.076
D1	2.20	2.30	2.40
E	2.924	3.00	3.076
E1	1.40	1.50	1.60
e	0.65BSC		
L	0.35	0.40	0.45
K	0.20	-	
N	8		
aaa	0.08		
bbb	0.10		