
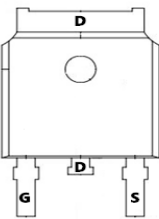
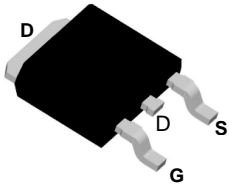
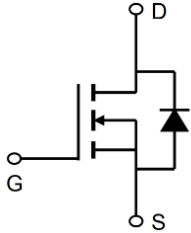


TM15N10D

N-Channel Enhancement Mosfet

<p><b>General Description</b></p> <ul style="list-style-type: none"> <li>• Low R<sub>DS(ON)</sub></li> <li>• RoHS and Halogen-Free Compliant</li> </ul> <p><b>Applications</b></p> <ul style="list-style-type: none"> <li>• Load switch</li> <li>• PWM</li> </ul>	<p><b>General Features</b></p> <p>V<sub>DS</sub> = 100V I<sub>D</sub> = 15A</p> <p>R<sub>DS(ON)</sub> = 75mΩ (typ.) @ V<sub>GS</sub> = 10V</p> <p>100% UIS Tested</p> <p>100% R<sub>g</sub> Tested</p> 
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**D:TO-252-3L**

Marking: 15N10

**ABSOLUTE MAXIMUM RATINGS** ( T<sub>A</sub> = 25°C Unless otherwise noted )

Symbol	Parameter	Rating	Unit	
<b>Common Ratings</b> (T <sub>A</sub> = 25°C Unless Otherwise Noted)				
V <sub>DSS</sub>	Drain-Source Voltage	100	V	
V <sub>GSS</sub>	Gate-Source Voltage	±20		
T <sub>J</sub>	Maximum Junction Temperature	175	°C	
T <sub>STG</sub>	Storage Temperature Range	-55 to 175	°C	
I <sub>S</sub>	Diode Continuous Forward Current	15	A	
I <sub>DM</sub>	300µs Pulse Drain Current Tested	86	A	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	15	A
		T <sub>C</sub> = 100°C	11	
P <sub>D</sub>	Maximum Power Dissipation	60	W	
R <sub>θJC</sub>	Thermal Resistance-Junction to Case	2.5	°C/W	
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	50	°C/W	
E <sub>AS</sub>	Avalanche Energy, Single Pulsed (L=0.3mH)	30	mJ	

**Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied**

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**ELECTRICAL CHARACTERISTICS**( $T_A=25^{\circ}\text{C}$  Unless otherwise noted)

Symbol	Parameter	Test Conditions				Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	100	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=80V, V_{GS}=0V$	-	-	1	$\mu A$
		$T_J=85^{\circ}\text{C}$	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	0.5	1.5	2.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 16V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
$R_{DS(ON)}^a$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=15A$	-	75	86	m $\Omega$
		$V_{GS}=4.5V, I_{DS}=8A$	-	87	99	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD}=5A, V_{GS}=0V$	0.6	0.8	1.1	V
$t_{rr}$	Reverse Recovery Time	$I_{DS}=5A, di_{SD}/dt=100A/\mu s$	33	47	61	ns
$Q_{rr}$	Reverse Recovery Charge		61	87	113	nC
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=30V,$ Frequency=1.0MHz		840		pF
$C_{oss}$	Output Capacitance		45	80	115	
$C_{rss}$	Reverse Transfer Capacitance		25	50	75	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=30V, R_L=30\Omega,$ $I_{DS}=1A, V_{GEN}=10V,$ $R_G=6\Omega$	-	13	24	ns
$t_r$	Turn-on Rise Time		-	10	19	
$t_{d(OFF)}$	Turn-off Delay Time		-	32	60	
$t_f$	Turn-off Fall Time		-	16	30	
<b>Gate Charge Characteristics</b> <sup>b</sup>						
$Q_g$	Total Gate Charge	$V_{DS}=50V, V_{GS}=10V,$ $I_{DS}=5A$	12	21	30	nC
$Q_{gs}$	Gate-Source Charge		3.4	4.9	6.4	
$Q_{gd}$	Gate-Drain Charge		2.9	5.8	8.7	

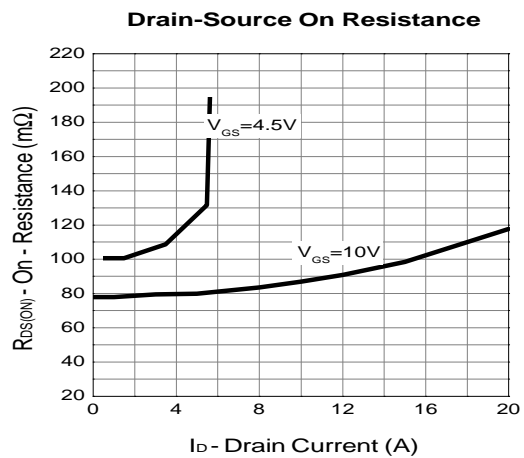
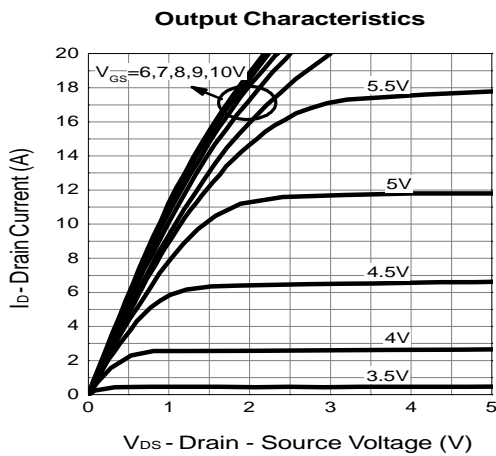
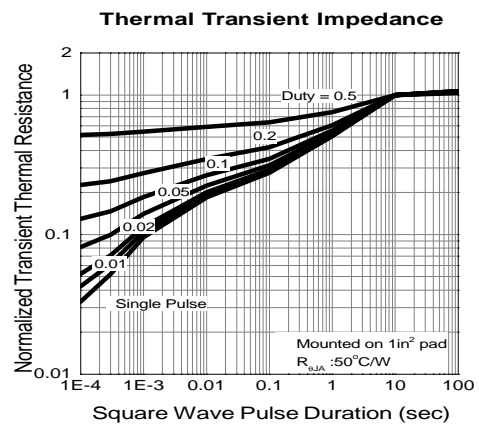
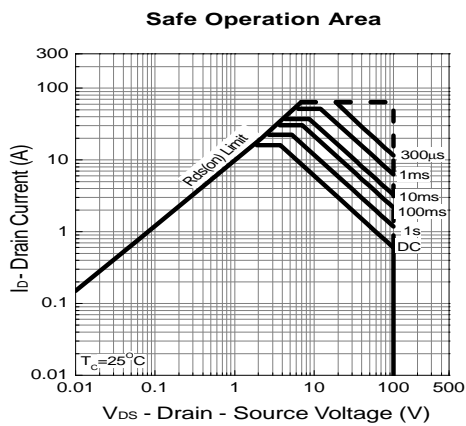
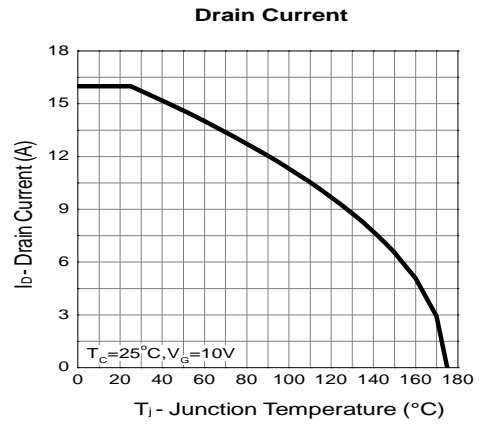
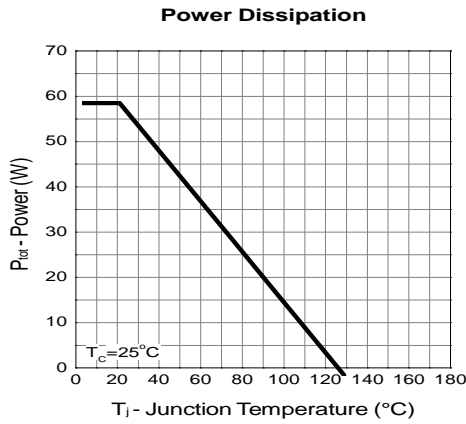
Note a : Pulse test ; pulse width $\leq 300\mu s$ , duty cycle $\leq 2\%$ .

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

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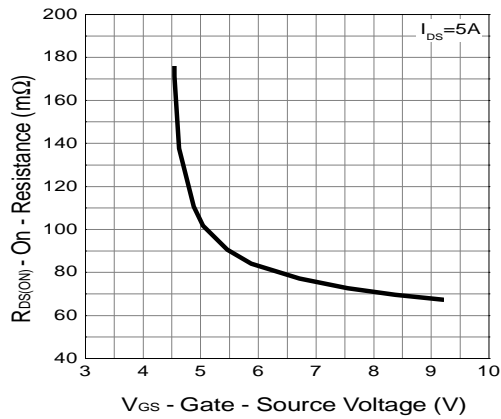
TYPICAL CHARACTERISTICS (25°C Unless Note)



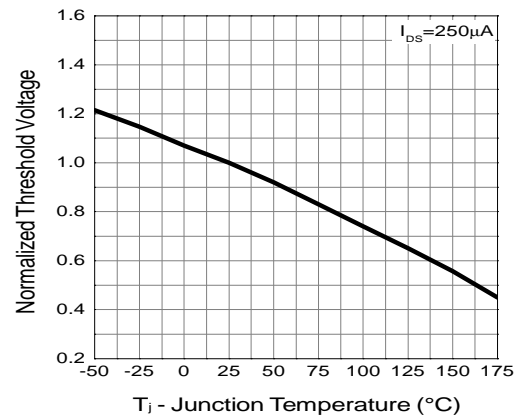
**TM15N10D**

**N-Channel Enhancement Mosfet**

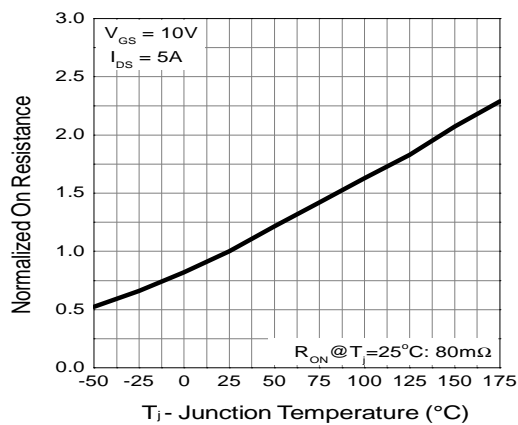
**Gate-Source On Resistance**



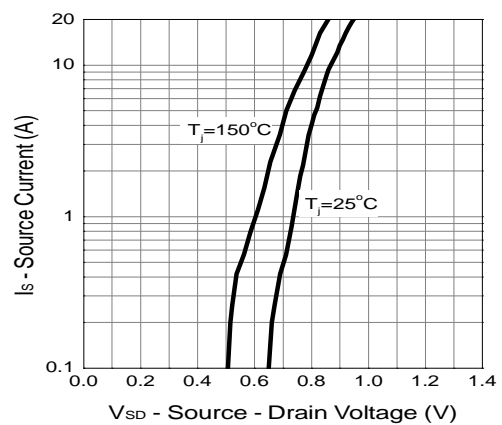
**Gate Threshold Voltage**



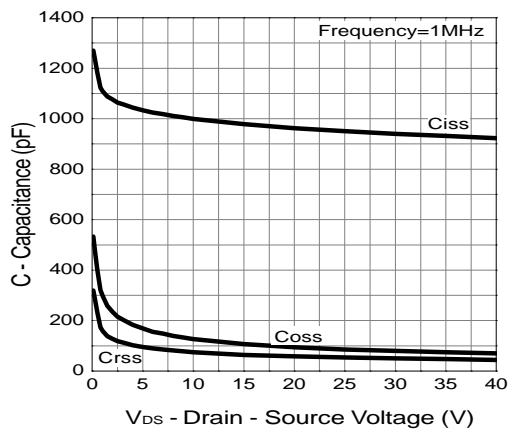
**Drain-Source On Resistance**



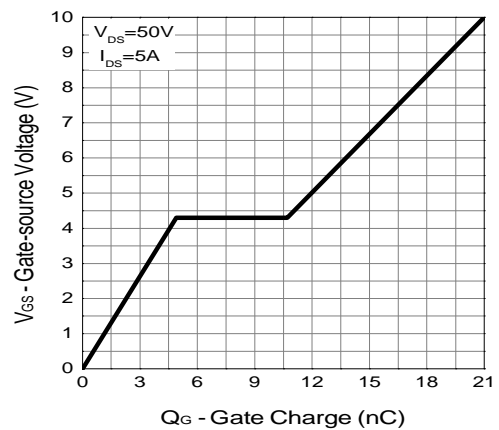
**Source-Drain Diode Forward**



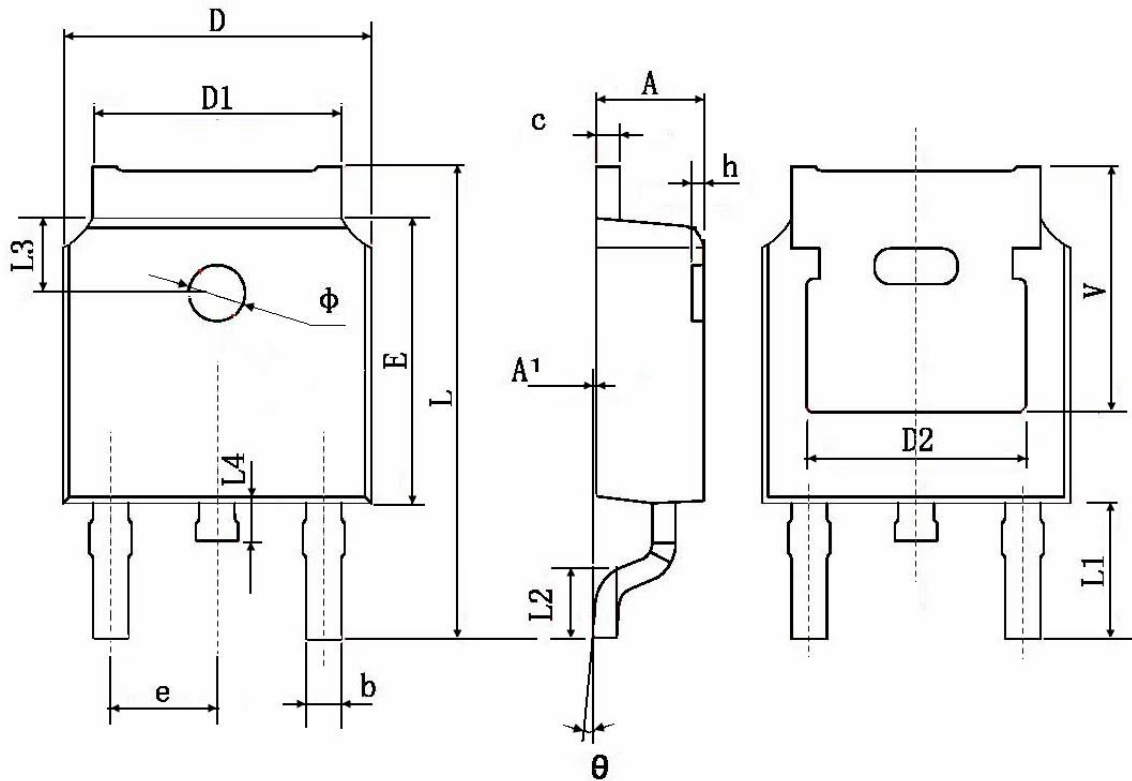
**Capacitance**



**Gate Charge**



**Package Information : TO-252-3L**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
v	5.350 TYP.		0.211 TYP.	