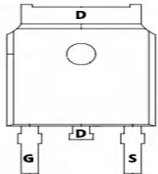
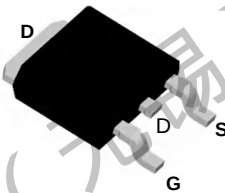
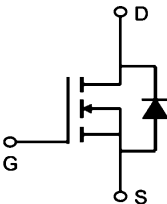




TM30N02D

N-Channel Enhancement Mosfet

General Description • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant Applications • Load switch • PWM		General Features $V_{DS} = 20V$ $I_D = 30A$ $R_{DS(ON)} = 8.8m\Omega(\text{typ.}) @ V_{GS} = 4.5V$ 100% UIS Tested 100% R_g Tested		
D:TO-252-3L				
				
Marking: 30N02				
Absolute Maximum Ratings ($T_C = 25^\circ C$ Unless Otherwise Noted)				
Symbol	Parameter	Rating	Units	
V_{DS}	Drain-Source Voltage	20	V	
V_{GS}	Gate-Source Voltage	± 12	V	
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V$	30	A	
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V$	19	A	
I_{DM}	Pulsed Drain Current	111	A	
EAS	Single Pulse Avalanche Energy	12.1	mJ	
I_{AS}	Avalanche Current	11	A	
$P_D@T_C=25^\circ C$	Total Power Dissipation	5	W	
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$	
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$	
Thermal Data				
Symbol	Parameter	Typ.	Max.	
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	6.6	$^\circ C/W$



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N-Channel Enhancement Mosfet

Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250μA	20	-	-	V
Gate Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0 V	-	-	±100	nA
Drain Cut-off Current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0 V	-	-	1	μA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250μA	0.5	0.7	0.9	V
Drain-Source On-State Resistance ³	R _{DS(on)}	V _{GS} = 4.5V, I _D =5A	-	8.8	13	mΩ
		V _{GS} = 2.5V, I _D = 4.7A	-	12	20	
Dynamic Characteristics ⁴						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 10V, f = 1MHz	-	700	-	pF
Output Capacitance	C _{oss}		-	120	-	
Reverse Transfer Capacitance	C _{rss}		-	105	-	
Switching Characteristics ⁴						
Total Gate Charge	Q _g	V _{GS} = 4.5V, V _{DS} = 10V, I _D = 5A	-	10.5	-	nC
Gate-Source Charge	Q _{gs}		-	2	-	
Gate-Drain Charge	Q _{gd}		-	2.5	-	
Turn-On Time	t _{d(on)}	V _{GEN} = 5V, V _{DD} = 10V, I _D = 5A,R _G = 3Ω,	-	10	-	ns
Rise Time	t _r		-	20	-	
Turn-Off Time	t _{d(off)}		-	32	-	
Fall Time	t _f		-	12	-	
Source-Drain Diode Characteristics						
Body Diode Voltage ³	V _{SD}	I _S =4A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	I _S		-	-	30	A



Typical Characteristics

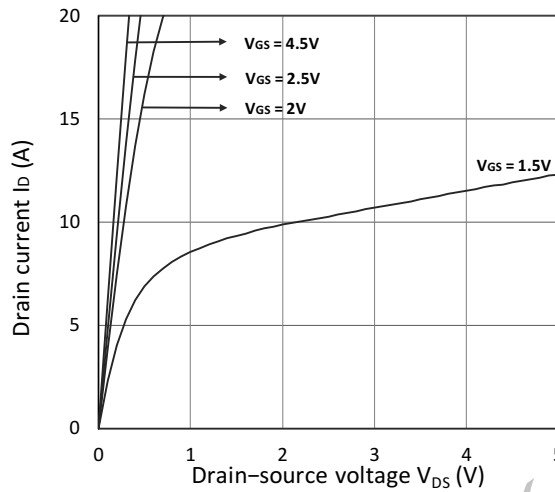


Figure 1. Output Characteristics

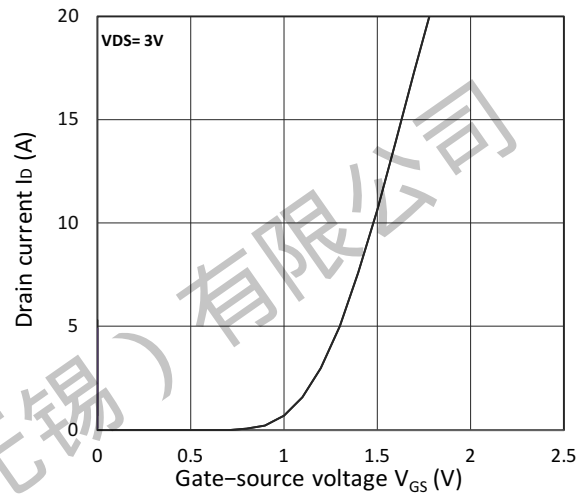


Figure 2. Transfer Characteristics

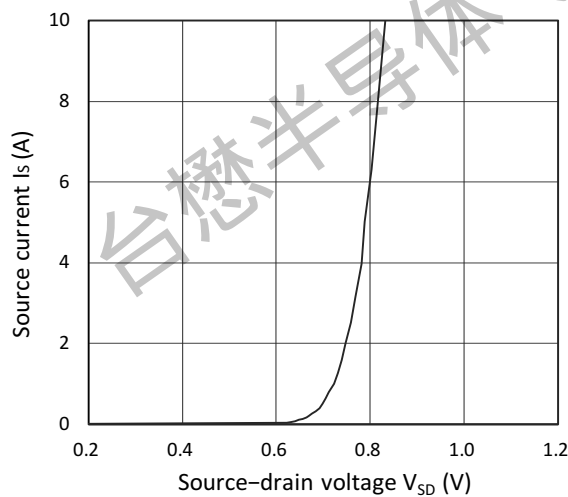


Figure 3. Forward Characteristics of Reverse

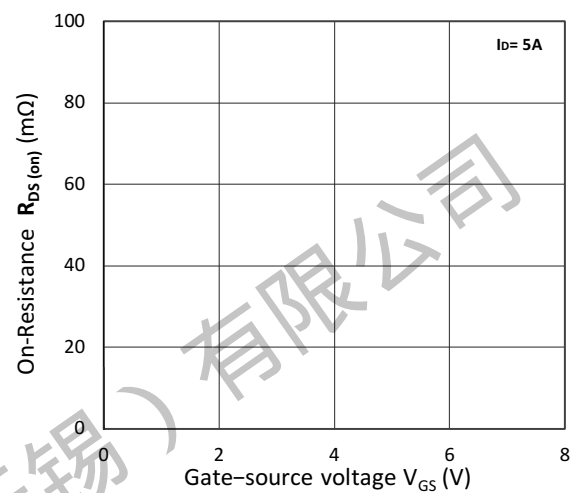


Figure 4. $R_{DS(on)}$ vs. V_{GS}

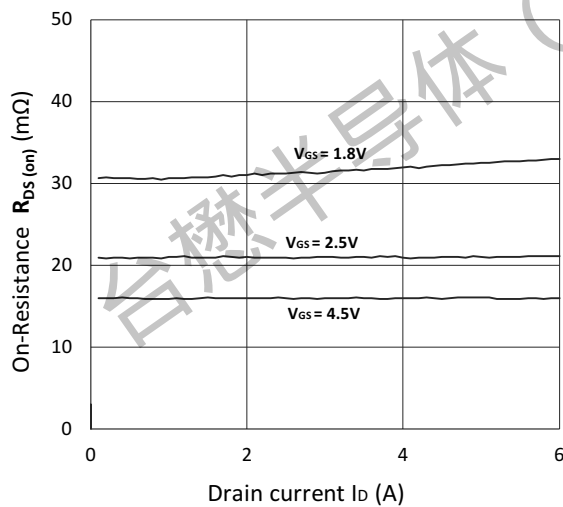


Figure 5. $R_{DS(on)}$ vs. I_D

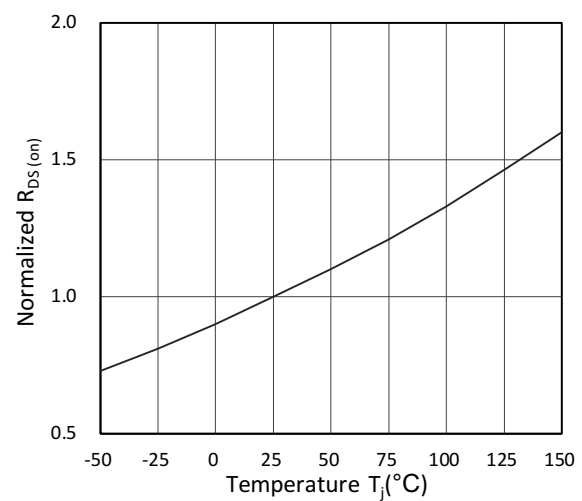


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature



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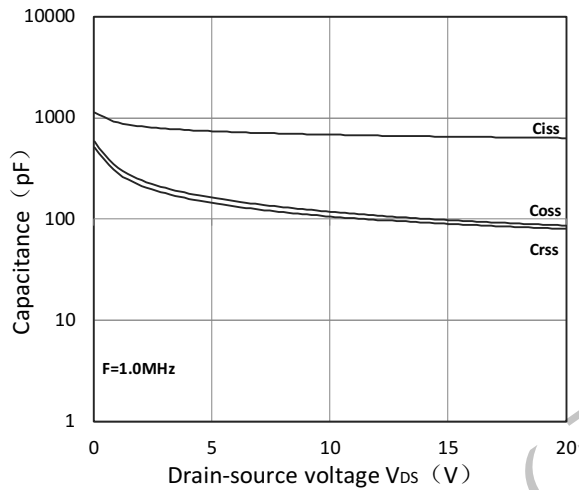


Figure 7. Capacitance Characteristics

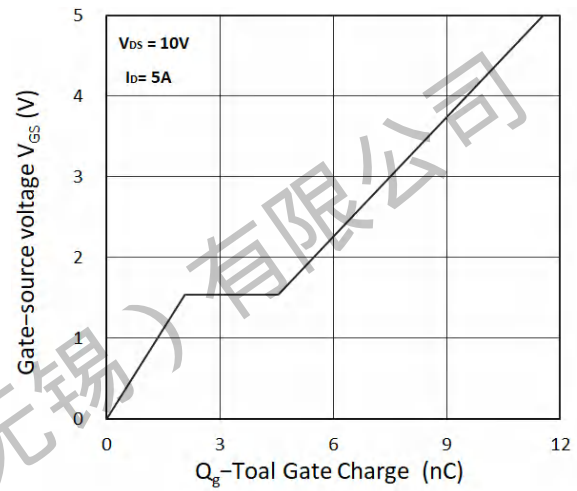
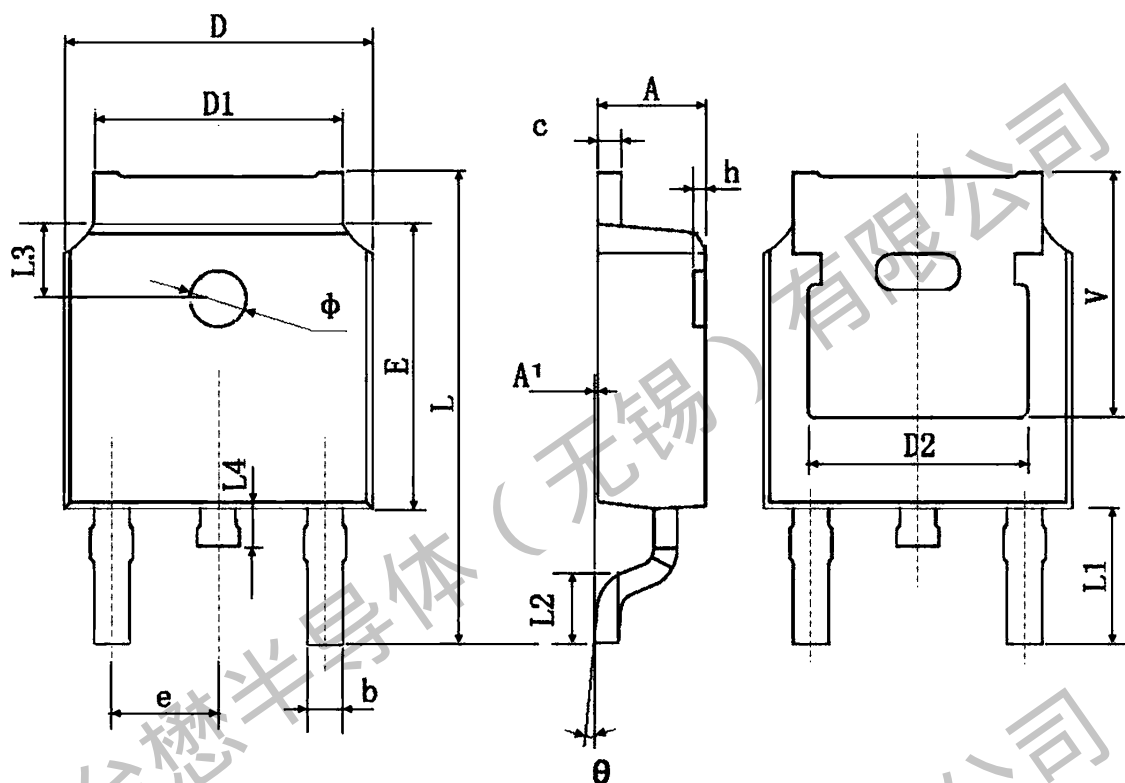


Figure 8. Gate Charge Characteristics

N-Channel Enhancement Mosfet

Package Mechanical Data: TO-252-3L



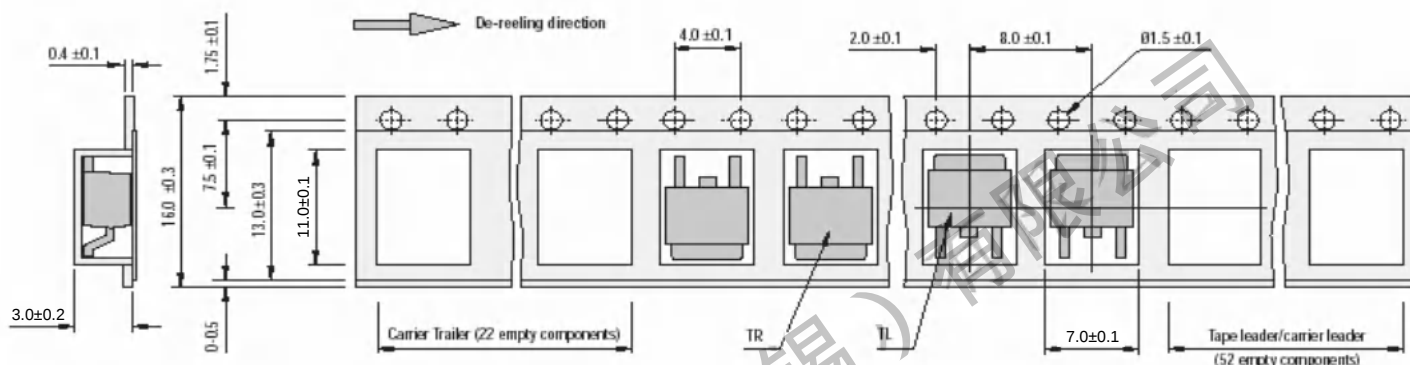
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	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.	



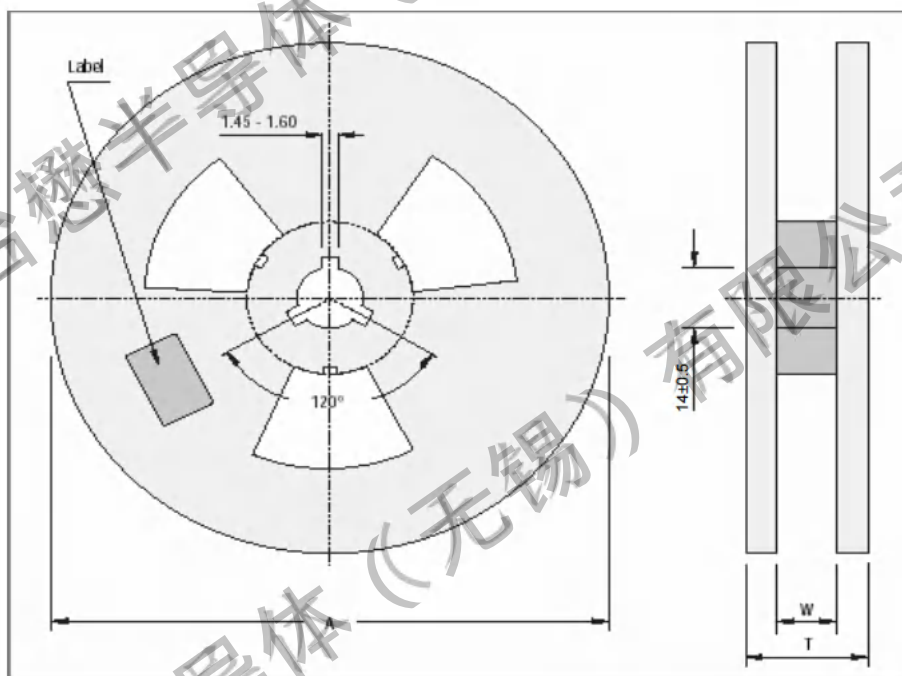
TM30N02D

N-Channel Enhancement Mosfet

TO-252-3L Embossed Carrier Tape



TO-252-3L Reel



All Dimensions are in mm.

Reel Specifications				
Package	Tape Width	Reel Dia. A - Max	Inside Thickness W	Reel Thickness T - max
TO-252-3L	16	330	18.0 ± 1.5	20

Packaging Information

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13 inch	5,000 pcs	355×370×50	25,000 pcs	380×275×380	



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Revision history:

Date	Rev	Description	Page
2023.05.09	23.05	Original	