


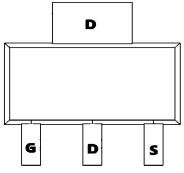
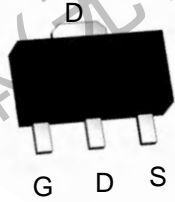
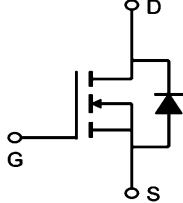


TM10N03SI

N-Channel Enhancement Mosfet

<p>General Description</p> <ul style="list-style-type: none"> • Low R_{DS(ON)} • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM 	<p>General Features</p> <p>V_{DS} = 30V I_D = 10A</p> <p>R_{DS(ON)} = 16mΩ (typ.) @ V_{GS} = 10V</p> <p>100% UIS Tested 100% R_g Tested</p> 
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SI:SOT-89-3L

Marking: 10N03

Absolute Maximum Ratings (T_C = 25°C Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ 10V	10	A
I _{DM}	Pulsed Drain Current	30	A
P _D	Total Power Dissipation	3.2	W
T _{STG}	Storage Temperature Range	-55 to 175	°C
T _J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient	---	39	°C/W
R _{θJC}	Thermal Resistance Junction-Case	---	9.6	°C/W

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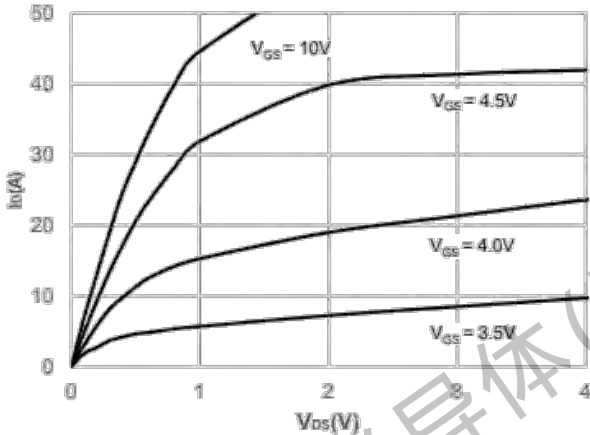
Electrical Characteristics (T_A= 25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =30V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0A	---	---	±100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	0.9	1.2	1.5	V
R _{DS(on)}	Drain-Source On Resistance	V _{GS} =10V, I _D =6A	---	16	19	m Ω
		V _{GS} =4.5V, I _D =4A	---	20	25	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance ⁴	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	471	---	pF
C _{oss}	Output Capacitance ⁴		---	72	--	
C _{rss}	Reverse Transfer Capacitance ⁴		---	55	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ⁵	V _{DS} =15V, I _D =3A, R _{ENG} =3 Ω, V _{GS} =10V	---	3.8	---	ns
t _r	Rise Time ⁵		---	10	---	ns
t _{d(off)}	Turn-Off Delay Time ⁵		---	13	---	ns
t _f	Fall Time ⁵		---	1.9	---	ns
Q _g	Total Gate Charge ⁵	V _{GS} =4.5V, V _{DS} =15V, I _D =5.8A	---	9.5	---	nc
Q _{gs}	Gate-Source Charge ⁵		---	1.9	---	nc
Q _{gd}	Gate-Drain "Miller" Charge ⁵		---	2.1	---	nc
Drain-Source Diode Characteristics						
I _S	Continuous Drain Current ²	V _D =V _G =0V	---	---	10	A
I _{SM}	Pulsed Drain Current		---	---	30	A
V _{SD}	Diode Forward Voltage ³	V _{GS} =0V, I _{SD} =5.8A	0.5	0.86	1.1	V

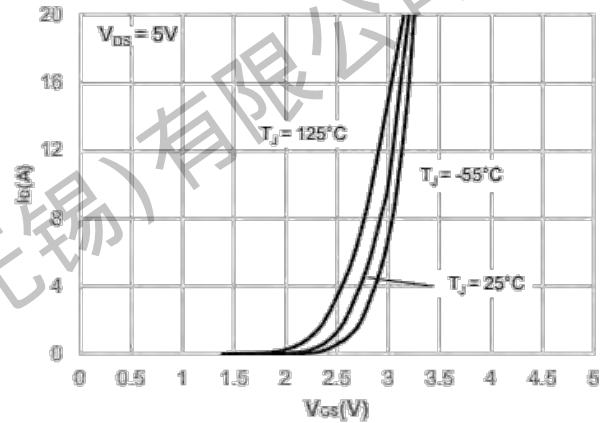
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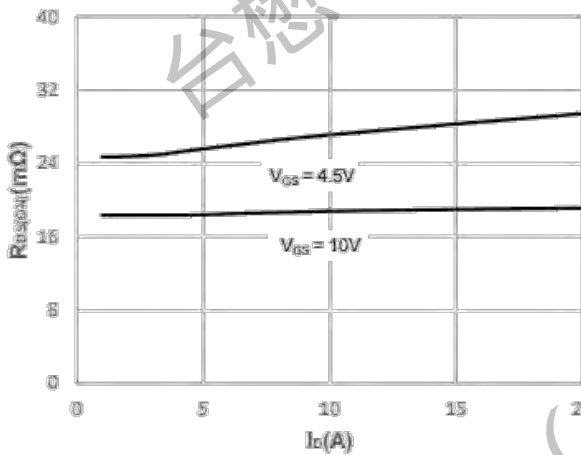
Typical Characteristics: ($T_c=25^\circ\text{C}$ unless otherwise noted)



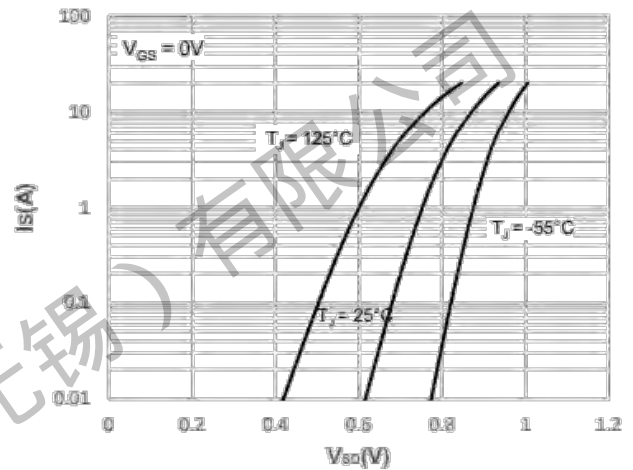
Output Characteristics



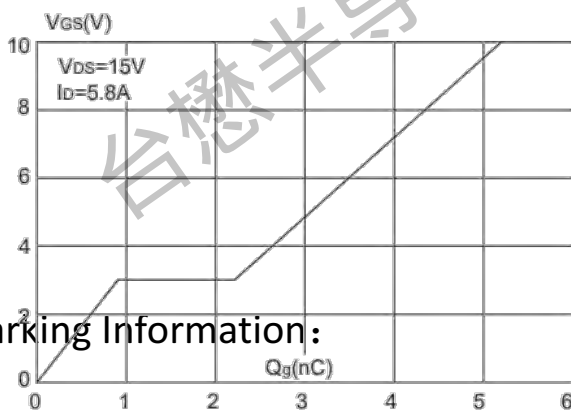
Typical Transfer Characteristics



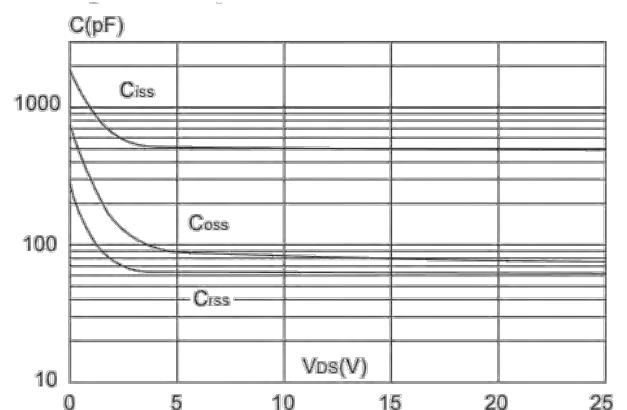
On-resistance vs. Drain Current



Body Diode Characteristics



Gate Charge Characteristics

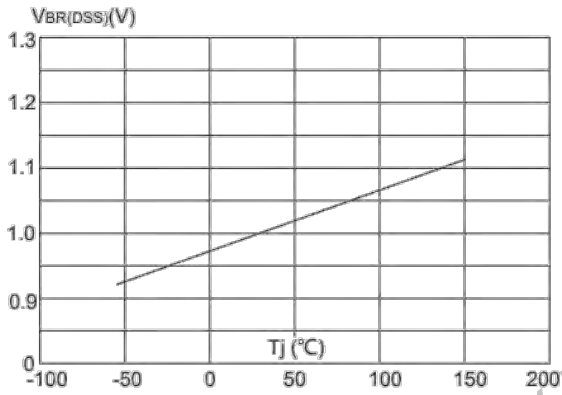


Capacitance Characteristics

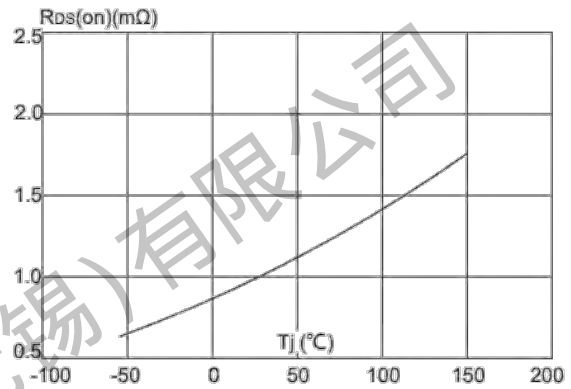
Marking Information:

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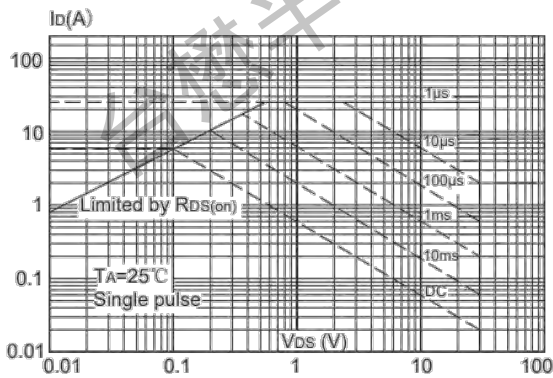
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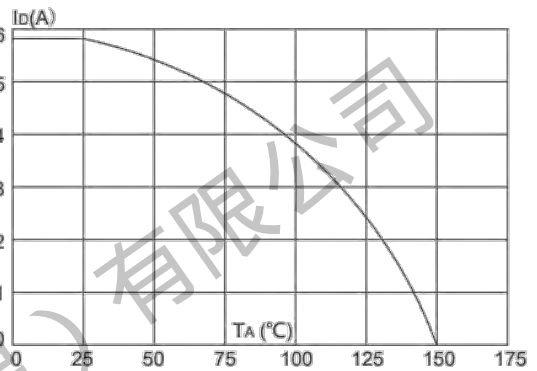
Normalized Breakdown Voltage vs. Junction Temperature



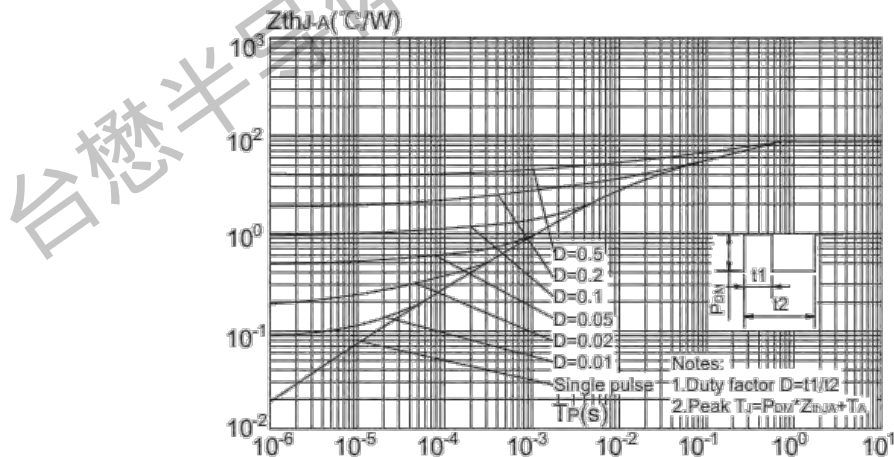
Normalized on Resistance vs. Junction Temperature



Maximum Safe Operating Area



Maximum Continuous Drain Current vs. Case Temperature



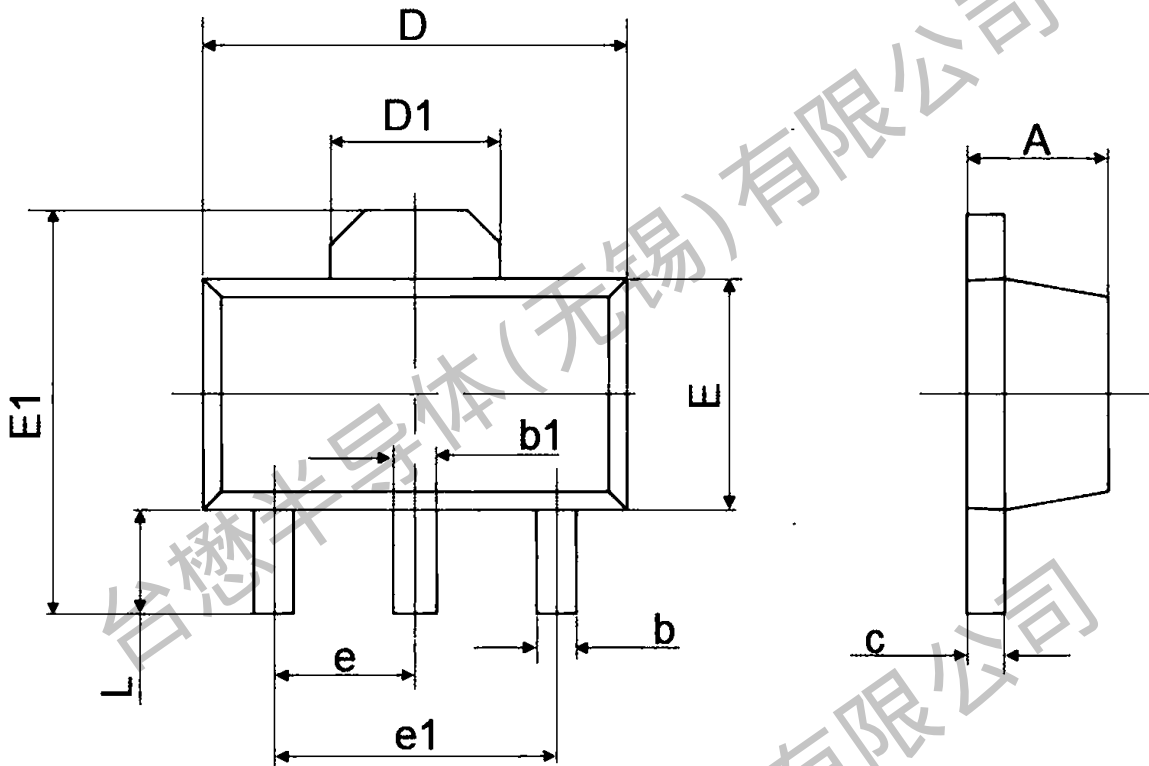
Maximum Effective Transient Thermal Impedance, Junction-to-Case



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Package Mechanical Data:SOT-89-3L

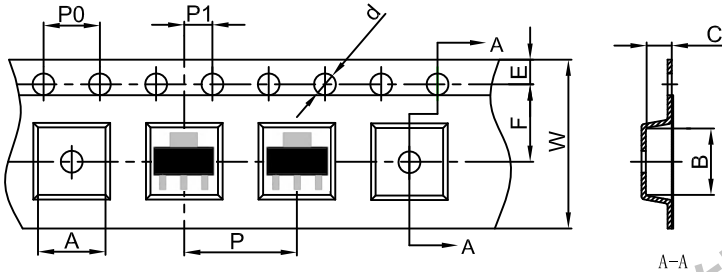


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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SOT-89-3L Embossed Carrier Tape



Packaging Description:

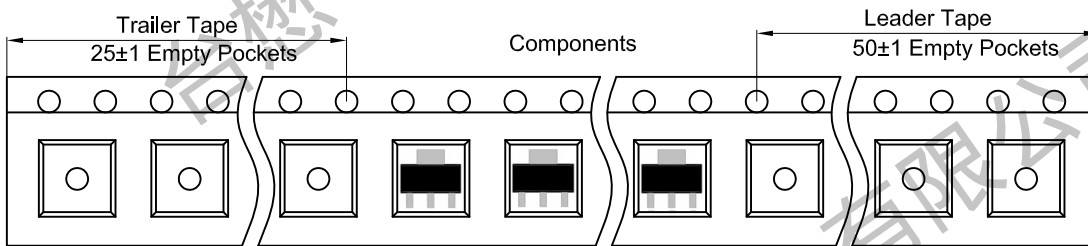
SOT-89-3L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 1,000 units per 7" or 18.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

ALL DIM IN mm

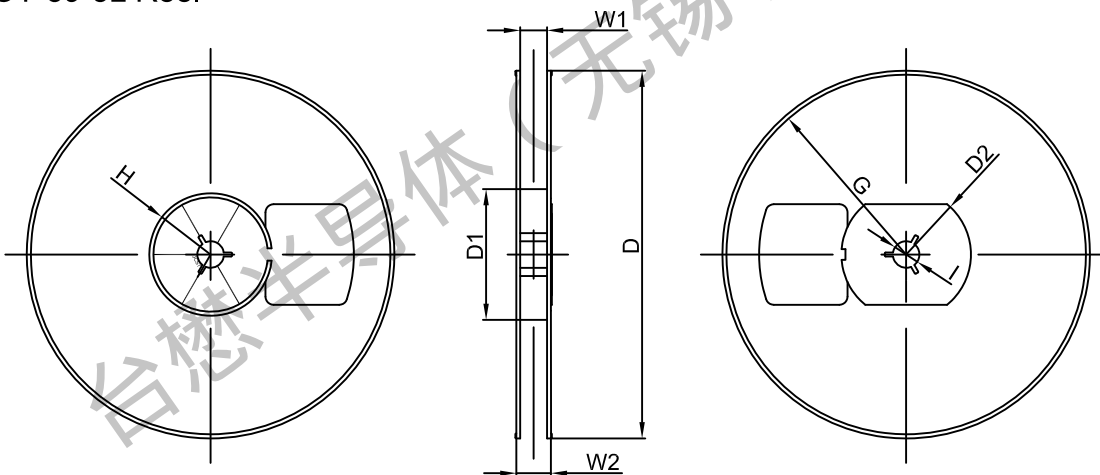
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-89-3L	4.85	4.45	1.85	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOT-89-3L Tape Leader and Trailer



SOT-89-3L Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø180.00	60.00	R32.00	R86.50	R30.00	Ø13.00	13.20	16.50

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
1000 pcs	7 inch	10,000 pcs	205×195×220	40,000 pcs	430×415×240	



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Revision history:

Date	Rev	Description	Page
2023.05.17	23.05	Original	