TM05P10SI

P-Channel Enhancement Mosfet

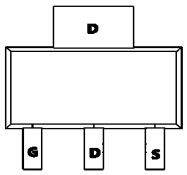
General Description
- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

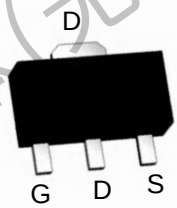
Applications
- Load switch
- PWM

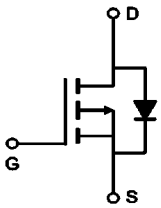
General Features
V_{DS} =-100V I_D=-5A
$R_{DS(ON)}$ =310mΩ(typ.) @ V_{GS} =-10V

100% UIS Tested
100% R_g Tested

SI:SOT-89-3L







Marking:5P10

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ - 10V	-5	A
I_{DM}	Pulsed Drain Current	-30	A
EAS	Single Pulse Avalanche Energy	---	mJ
P_D(at T_A = 25°C)	Total Device Dissipation	3.0	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
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	42	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	---	°C/W

P-Channel Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage (I_D = -250uA,V_{GS}=0V)	BV_{DSS}	-100	—	—	V
Gate Threshold Voltage (I_D = -250uA,V_{GS}= V_{DS})	$V_{GS(th)}$	-1	-2	-3	V
Zero Gate Voltage Drain Current (V_{GS}=0V, V_{DS}= -100V)	I_{DSS}	—	—	-1	uA
Gate Body Leakage (V_{GS}=±20V, V_{DS}=0V)	I_{GSS}	—	—	±100	nA
Static Drain-Source On-State Resistance (I_D= -5A,V_{GS}= -10V) (I_D= -3A,V_{GS}= -4.5V)	$R_{DS(ON)}$	—	310 380	380 450	mΩ
Diode Forward Voltage Drop (I_{SD}= -5A,V_{GS}=0V)	V_{SD}	—	—	-1.2	V
Input Capacitance (V_{GS}=0V, V_{DS}= -50V,f=1MHz)	C_{ISS}	—	970	—	pF
Common Source Output Capacitance (V_{GS}=0V, V_{DS}= -50V,f=1MHz)	C_{OSS}	—	26	—	pF
Reverse Transfer Capacitance (V_{GS}=0V, V_{DS}= -50V,f=1MHz)	C_{RSS}	—	21	—	pF
Total Gate Charge (V_{DS}= -50V, I_D= -0.5A, V_{GS}= -10V)	Q_g	—	18	—	nC
Gate Source Charge (V_{DS}= -50V, I_D= -0.5A, V_{GS}= -10V)	Q_{gs}	—	2	—	nC
Gate Drain Charge (V_{DS}= -50V, I_D= -0.5A, V_{GS}= -10V)	Q_{gd}	—	2	—	nC
Turn-ON Delay Time (V_{DS}= -50V I_D= -3A, R_{GEN}=3 Ω ,V_{GS}= -10V)	$t_{d(on)}$	—	8	—	ns
Turn-ON Rise Time (V_{DS}= -50V I_D= -3A, R_{GEN}=3 Ω ,V_{GS}= -10V)	t_r	—	25	—	ns
Turn-OFF Delay Time (V_{DS}= -50V I_D= -3A, R_{GEN}=3 Ω ,V_{GS}= -10V)	$t_{d(off)}$	—	132	—	ns
Turn-OFF Fall Time (V_{DS}= -50V I_D= -3A, R_{GEN}=3 Ω ,V_{GS}= -10V)	t_f	—	150	—	ns

■Typical Characteristic Curve

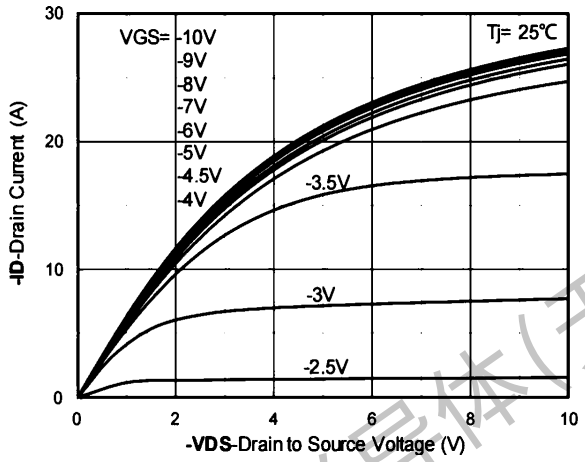


Figure 1: Output Characteristics

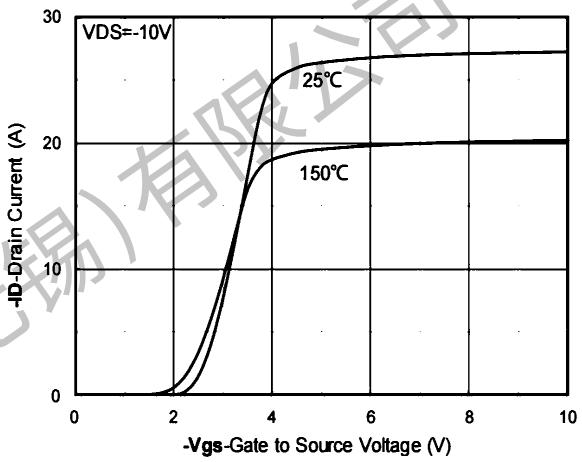


Figure 2: Transfer Characteristics

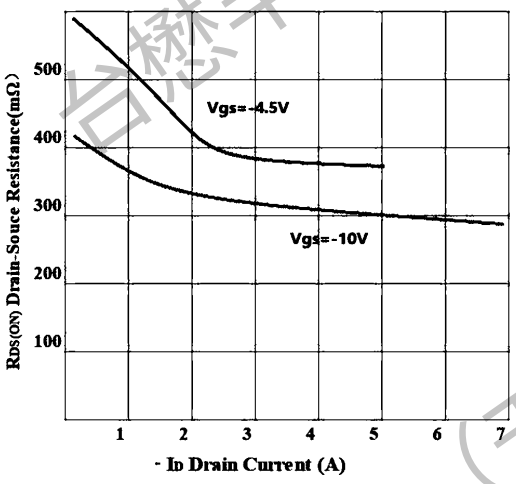


Figure 3: On-Resistance vs. Drain Current

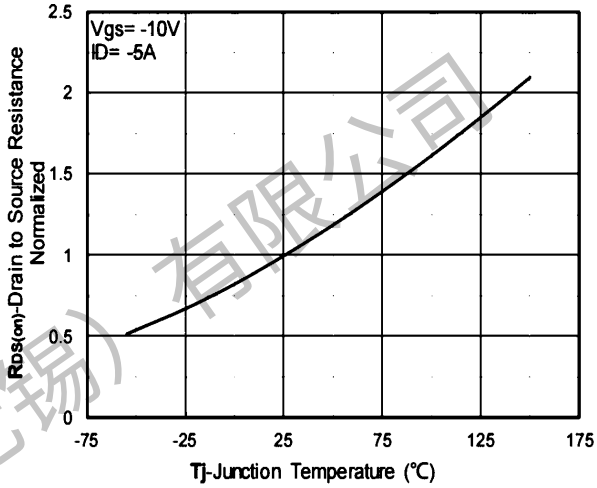


Figure 4: On-Resistance vs.

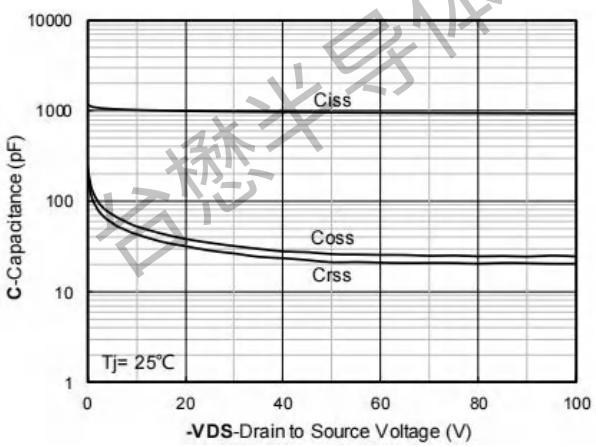


Figure 5: Capacitance Characteristics

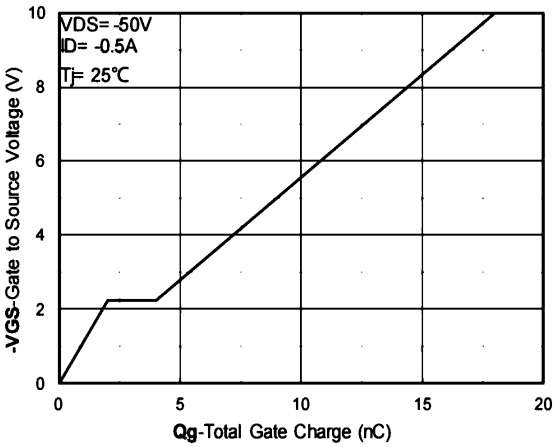


Figure 6: Gate-Charge Characteristics

■Typical Characteristic Curve

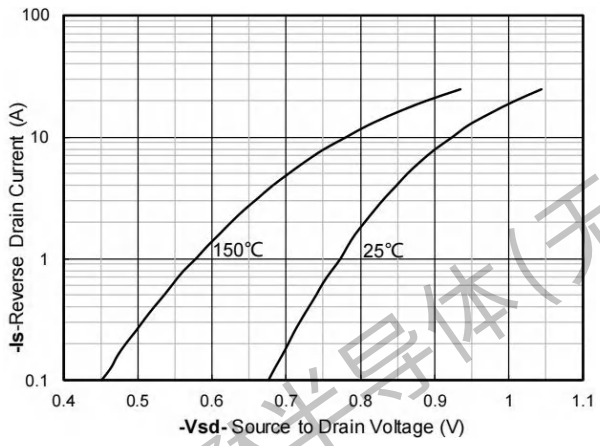


Figure 7: Body Diode Characteristics

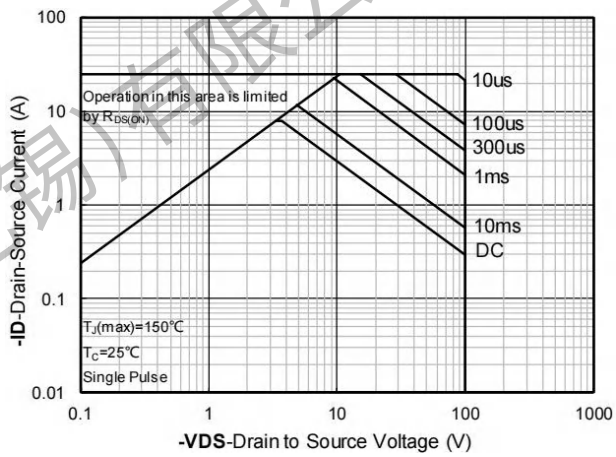


Figure 8: Safe Operating Area

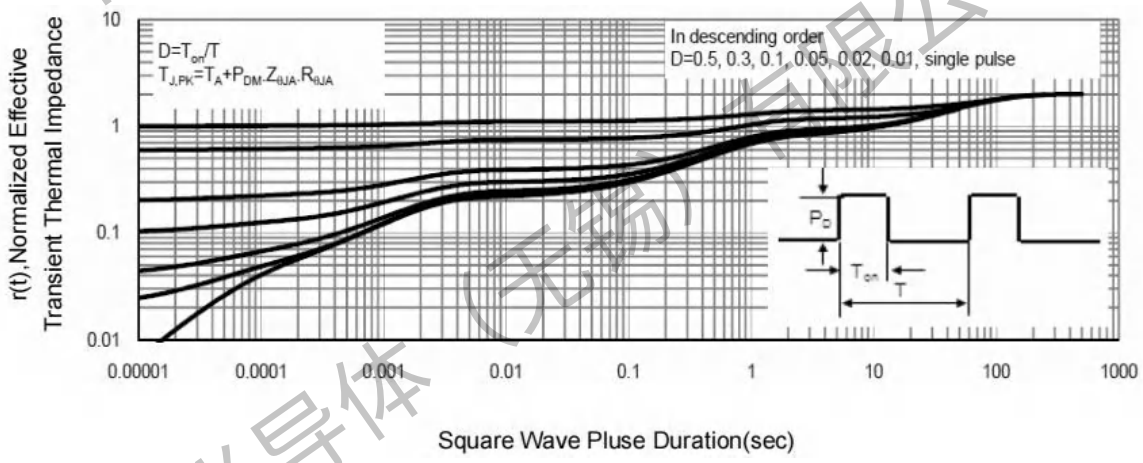
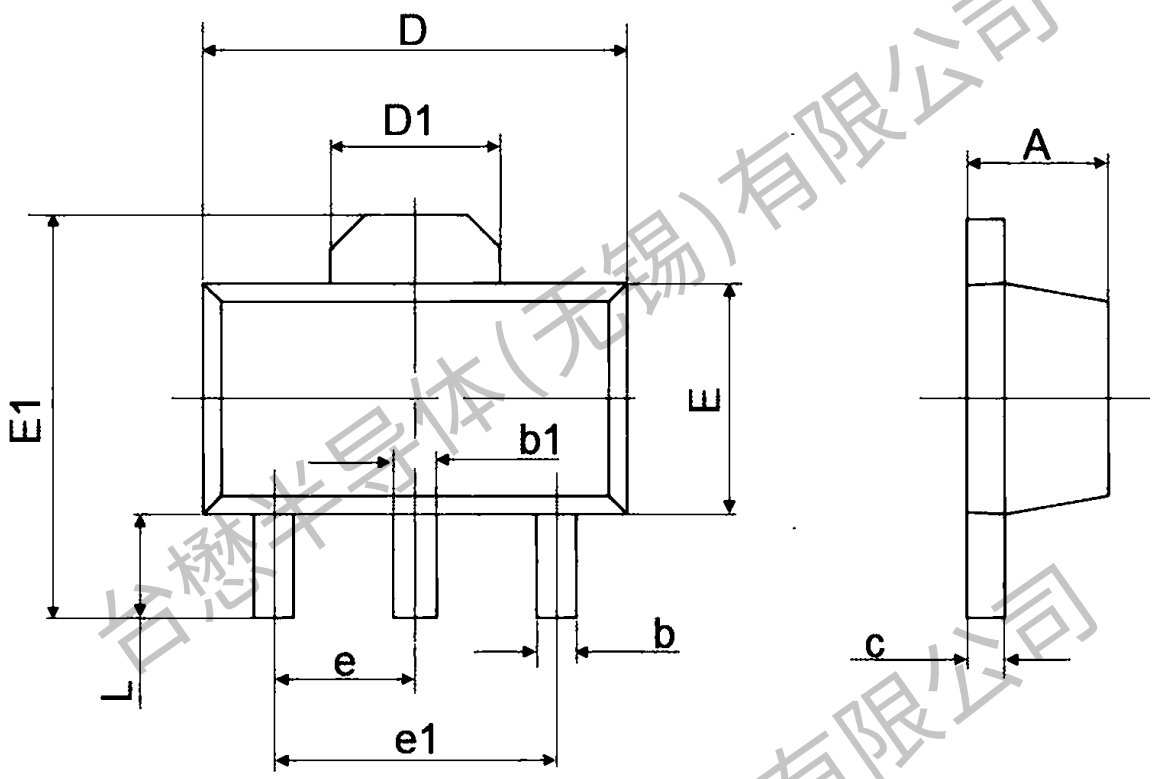


Figure 9: Transient Thermal Response Curve

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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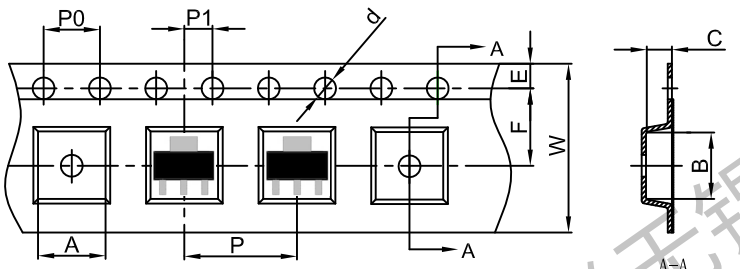
SOT-89-3L Embossed Carrier Tape



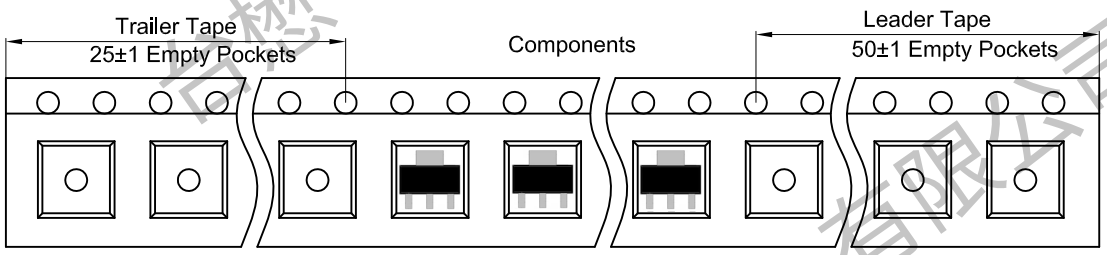
Packaging Description:

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).

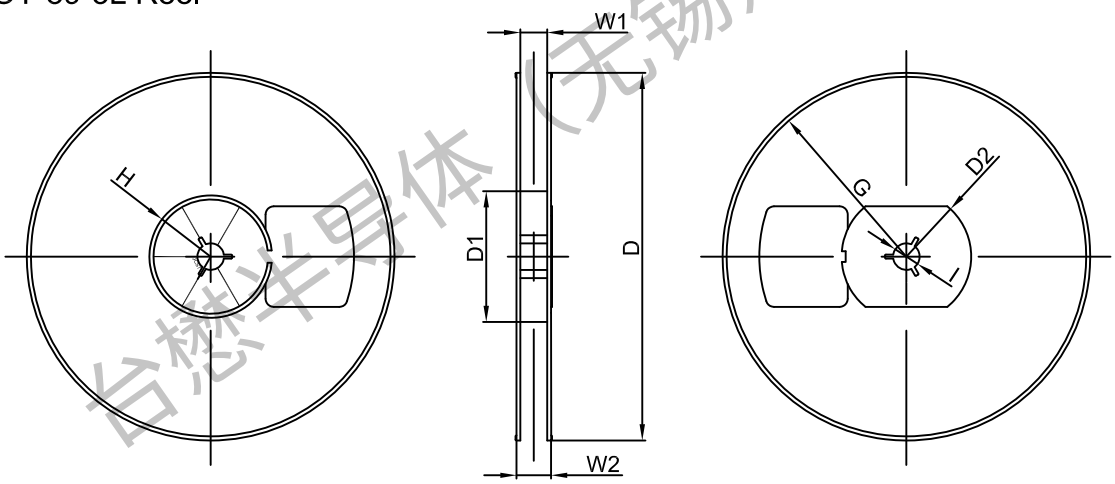
ALL DIM IN mm

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
2023.09.19	23.09	Original	