

SuperMOS – SOT23-3L 100V V_{DSS} , 120m Ω $R_{DS(ON)}$, N-channel MOSFET

1. Description

The ES0103Y is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product ES0103Y is Pb-free.

2. Features

- 100V, $R_{DS(ON)}=120m\Omega$ (TYP.) @ $V_{GS}=10V$
- $R_{DS(ON)}=130m\Omega$ (TYP.) @ $V_{GS}=4.5V$
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

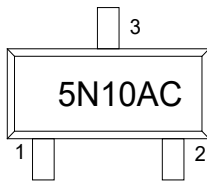
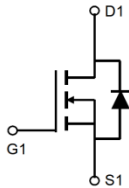
3. Applications

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ES0103Y	SOT23-3L	5N10AC	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
1	Gate		
2	Source		
3	Drain		

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	BV_{DSS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	3.0
		$T_A=100^\circ\text{C}$	2.0
Maximum Power Dissipation	P_D	1.4	W
Pulsed Drain Current	I_{DM}	12	A
Avalanche Current, Single Pulsed ^a	I_{AS}	9	A
Avalanche Energy, Single Pulsed ^a	E_{AS}	12	mJ
Operating Junction Temperature	T_J	150	°C
Lead Temperature	T_L	260	°C
Storage Temperature Range	T_{stg}	-55 to 150	°C

Thermal resistance ratings

Single Operation				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$		90	°C/W

Note:

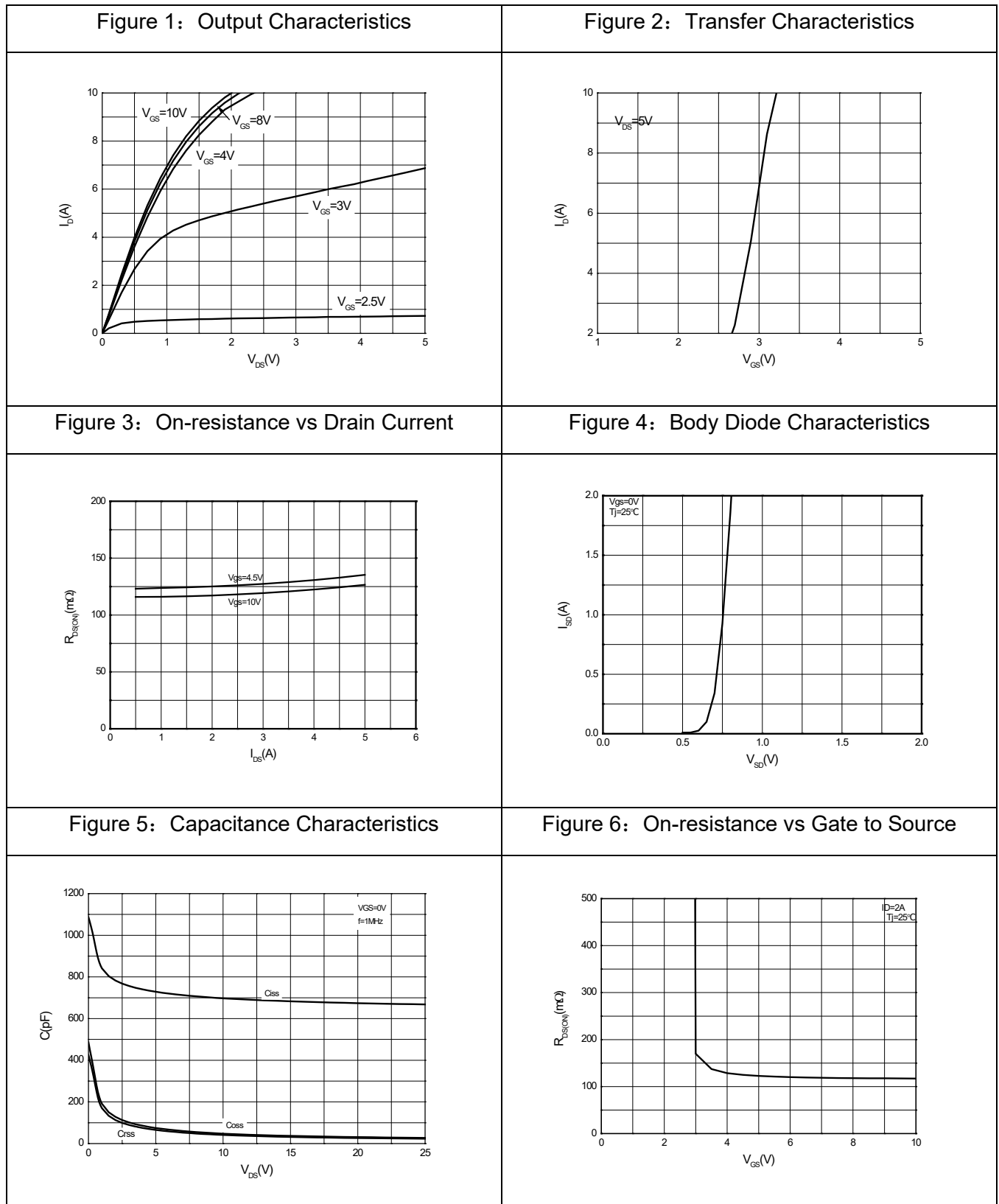
a: EAS condition: $T_J=25^\circ\text{C}$, $V_{DD}=100\text{V}$, $V_G=10\text{V}$, $L=0.3\text{mH}$, $R_g=25\Omega$

Electrical Characteristics

At TA = 25°C unless otherwise specified

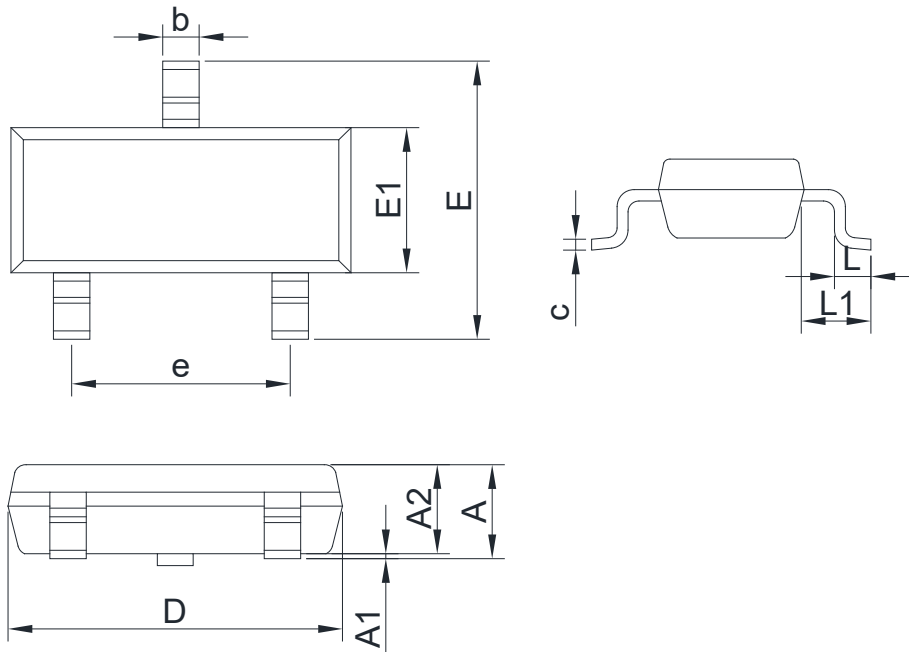
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.7	2.5	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=2A$		120	150	m Ω
		$V_{GS}=4.5V, I_D=1.5A$		130	180	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS}=0V, f=1MHz,$ $V_{DS}=25V$		650		pF
Output Capacitance	C_{OSS}			30		
Reverse Transfer Capacitance	C_{RSS}			25		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=2A$			1.5	V

7. Typical Characteristic



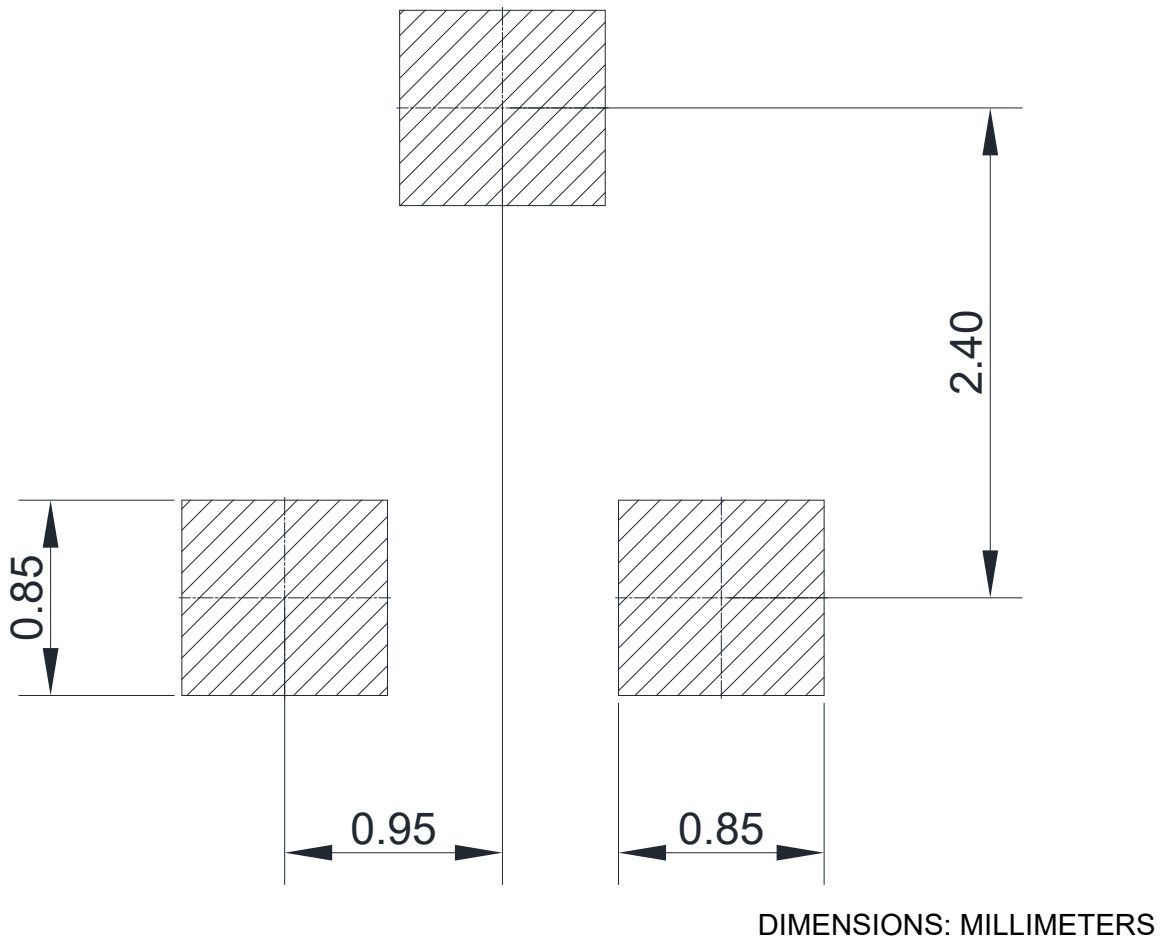
8. Dimension (SOT23-3L)

POD(Z)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER					
SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A	1.00	1.30	D	2.70	3.10
A1	0.00	0.11	E	2.60	3.00
A2	1.00	1.25	E1	1.50	1.80
b	0.30	0.50	e	1.70	2.10
c	0.10	0.25	L	0.30	0.55
L1	0.55	0.70			

9. Recommended Soldering Footprint



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