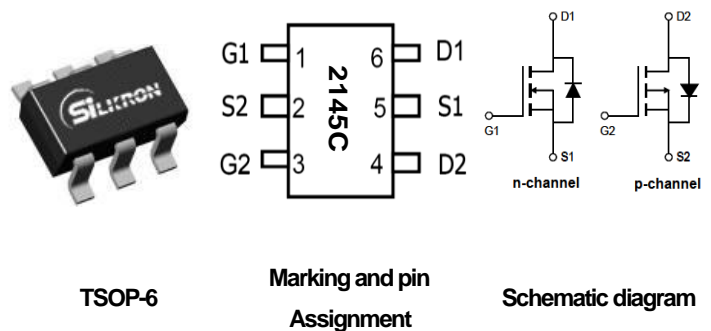


Main Product Characteristics:

	n-ch	p-ch
V_{DSS}	20V	-20V
$R_{DSon}(typ.)$	38mohm	64mohm
I_D	4.8A	2.9A


Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for load switching and buttery protection applications
- 150°C operating temperature


Description:

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in load switching and a wide variety of other applications

Absolute max Rating:

Symbol	Parameter	Max.		Units
		N-channel	P-channel	
$I_D @ TC = 25^{\circ}C$	Continuous Drain Current, $V_{GS} @ 4.5V$ ①	4.8	-2.9	A
$I_D @ TC = 100^{\circ}C$	Continuous Drain Current, $V_{GS} @ 4.5V$ ①	3.9	-2.4	
I_{DM}	Pulsed Drain Current②	17	-11	
$P_D @ TC = 25^{\circ}C$	Power Dissipation③	1.7	1.7	W
V_{DS}	Drain-Source Voltage	20	-20	V
V_{GS}	Gate-to-Source Voltage	± 8	± 8	V
$T_J T_{STG}$	Operating Junction and Storage Temperature Range	-55 to + 150	-55 to + 150	$^{\circ}C$

Thermal Resistance

Symbol	Characterizes	Typ.	Max.		Units
			N-channel	P-channel	
$R_{\theta JA}$	Junction-to-ambient ($t \leq 10s$) ④	—	76	114	$^{\circ}C/W$
	Junction-to-Ambient (PCB mounted, steady-state) ④	—	53	53	$^{\circ}C/W$

Electrical Characterizes @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

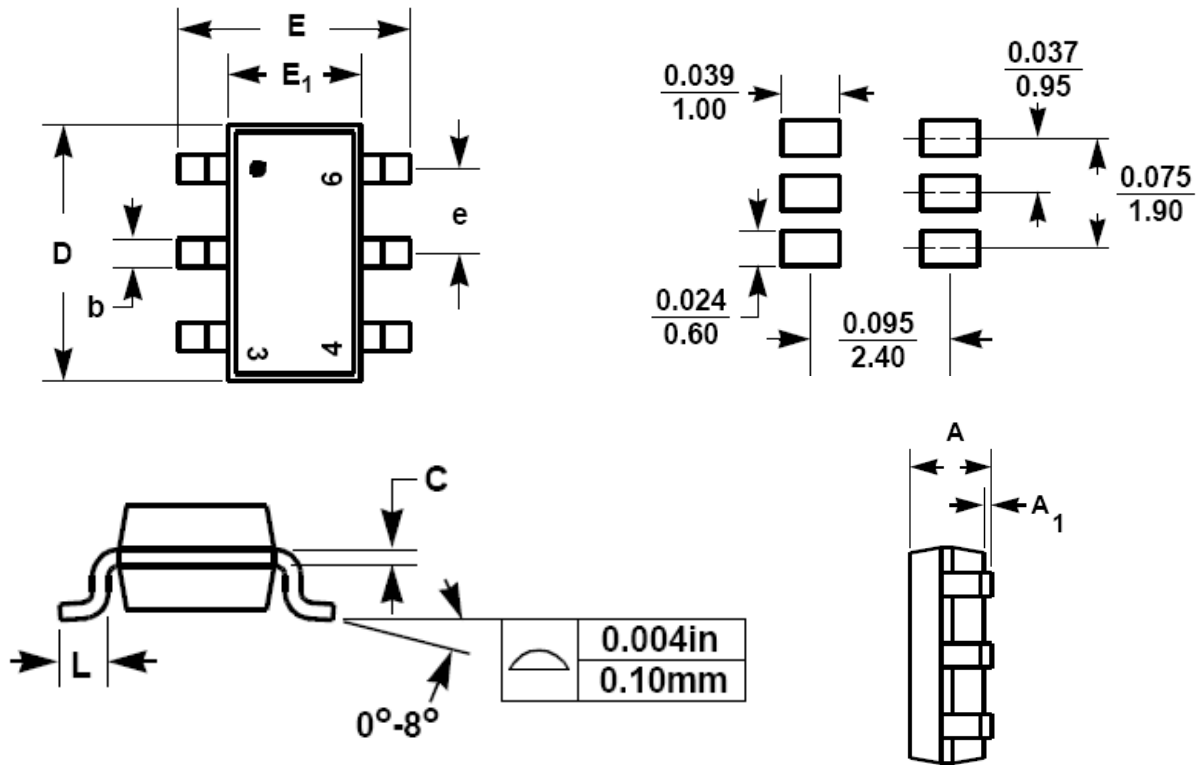
Symbol	Parameter		Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	N-channel	20	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
			22	—	—		$T_J = 125^{\circ}\text{C}$
		P-channel	-20	—	—		$V_{GS} = 0V, I_D = -250\mu A$
			-22	—	—		$T_J = 125^{\circ}\text{C}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	N-channel	—	38	55	m Ω	$V_{GS}=4.5V, I_D = 3.6A$
		P-channel	—	68	80		$V_{GS}=-4.5V, I_D = -3A$
		N-channel	—	64	75		$V_{GS}=2.5V, I_D = 3.1A$
		P-channel	—	89	100		$V_{GS}=-3.5V, I_D = -2A$
$V_{GS(th)}$	Gate threshold voltage	N-channel	0.4	0.72	1	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
		P-channel	0.4	0.56	1		$T_J = 125^{\circ}\text{C}$
		N-channel	-0.4	-0.78	-1		$V_{BS} = V_{GS}, I_D = -250\mu A$
		P-channel	-0.4	-0.66	-1		$T_J = 125^{\circ}\text{C}$
I_{DSS}	Drain-to-Source leakage current	N-channel	—	—	1	μA	$V_{DS} = 20V, V_{GS} = 0V$
		P-channel	—	—	-1		$V_{DS} = -20V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source forward leakage	N-channel	—	—	100	nA	$V_{GS} = 8V$
		N-channel	—	—	-100		$V_{GS} = -8V$
		P-channel	—	—	100		$V_{GS} = 8V$
		P-channel	—	—	-100		$V_{GS} = -8V$
Ciss	Input capacitance	N-channel	—	348	420	pF	$V_{GS} = 0V,$ $V_{DS} = 10V,$ $f = 1.0\text{MHz}$
Coss	Output capacitance	N-channel	—	58	70		
Crss	Reverse transfer capacitance	N-channel	—	32	39		
Ciss	Input capacitance	P-channel	—	519	622		$V_{GS} = 0V,$ $V_{DS} = -10V,$ $f = 1.0\text{MHz}$
Coss	Output capacitance	P-channel	—	75	90		
Crss	Reverse transfer capacitance	P-channel	—	58	70		

Source-Drain Ratings and Characteristics

Symbol	Parameter		Min.	Typ.	Max.	Units	Conditions	
I_S	Continuous Source Current (Body Diode)	N-channel	—	—	4.8	A	MOSFET symbol showing the integral reverse p-n junction diode.	
		P-channel	—	—	-2.9			
I_{SM}	Pulsed Source Current (Body Diode)	N-channel	—	—	17	A		
		P-channel	—	—	-11			
V_{SD}	Diode Forward Voltage	N-channel	—	0.69	1.2	V		$I_S=0.94A, V_{GS}=0V$
		P-channel	—	-0.72	-1.2			$I_S=-0.75A, V_{GS}=0V$

Notes:

- ①The maximum current rating is limited by bond-wires.
- ②Repetitive rating; pulse width limited by max. junction temperature.
- ③The power dissipation PD is based on max. junction temperature, using junction-to- ambient thermal resistance.
- ④The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^{\circ}\text{C}$

Mechanical Data:


SYMBOL	Millimeters	
	MIN	MAX
A	0.90	1.10
A1	0.10	
b	0.30	0.50
c	0.08	0.20
D	2.70	3.10
E	2.60	3.00
E1	1.40	1.80
e	0.95 BSC	
L	0.35	0.55

Notes:

- ① Dimensions are inclusive of plating
- ② Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils
- ③ Dimension L is measured in gauge plane.
- ④ Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

Ordering and Marking Information
Device Marking: 2145C

Package (Available)
TSOP-6
Operating Temperature Range
C : -55 to 150 °C

Devices per Unit

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
TSOP-6	3000pcs	10pcs	30000pcs	4pcs	120000pcs

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	$T_j=125^{\circ}\text{C}$ or 150°C @ 80% of Max $V_{DSS}/V_{CES}/V_R$	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	$T_j=125^{\circ}\text{C}$ or 150°C @ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices

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