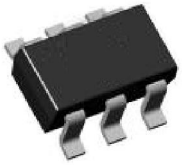
SSF2145CH6

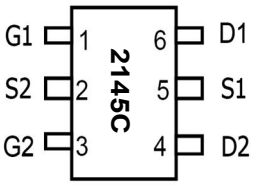
20V Complementary MOSFET

Main Product Characteristics

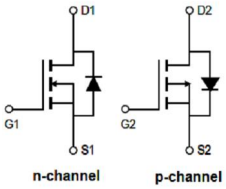
	N-Ch	P-Ch
V_{DSS}	20V	-20V
$R_{DS(on)}$(typ.)	38mohm	64mohm
I_D	4.8A	2.9A



TSOP-6



Marking and Pin Assignment



Schematic Diagram

Features and Benefits

- Advanced trench MOSFET process technology
- Special designed for load switching and buttery protection applications
- 150℃ operating temperature
- Lead free product

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°C	Continuous Drain Current, V_{GS} @ 4.5V①	4.8	-2.9	A
I_D @ TC = 100°C	Continuous Drain Current, V_{GS} @ 4.5V①	3.9	-2.4	
I_{DM}	Pulsed Drain Current②	17	-11	
P_D @TC = 25°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	°C

Thermal Resistance

Symbol	Characteristics	Typ.	Max.		Units
			N-channel	P-channel	
	Junction-to-ambient (t ≤ 10s) ④	—	76	114	℃/W

	Junction-to-Ambient (PCB mounted, steady-state) ④	—	53	53	℃/W

Electrical Characteristics @T_A=25℃ 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, ID = 250μA
			22	—	—		T_J = 125°C
		P-channel	-20	—	—		V_{GS} = 0V, ID = -250μA
			-22	—	—		T_J = 125°C
$R_{DS(on)}$	Static Drain-to-Source on-resistance	N-channel	—	38	55	mΩ	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 = 250μA
		P-channel	0.4	0.56	1		T_J = 125°C
		N-channel	-0.4	-0.78	-1		V_{DS} = V_{GS}, I_D = -250μA
		P-channel	-0.4	-0.66	-1		T_J = 125°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	VGS = 0V, VDS = 10V, f = 1.0MHz
Coss	Output capacitance	N-channel	—	58	70		
Crss	Reverse transfer capacitance	N-channel	—	32	39		
Ciss	Input capacitance	P-channel	—	519	622		VGS = 0V, VDS = -10V, f = 1.0MHz
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	N-channel	—	0.69	1.2	V	I_S=0.94A, V_{GS}=0V

	Voltage	P-channel	—	-0.72	-1.2		I_S=-0.75A, V_{GS}=0V

Notes:

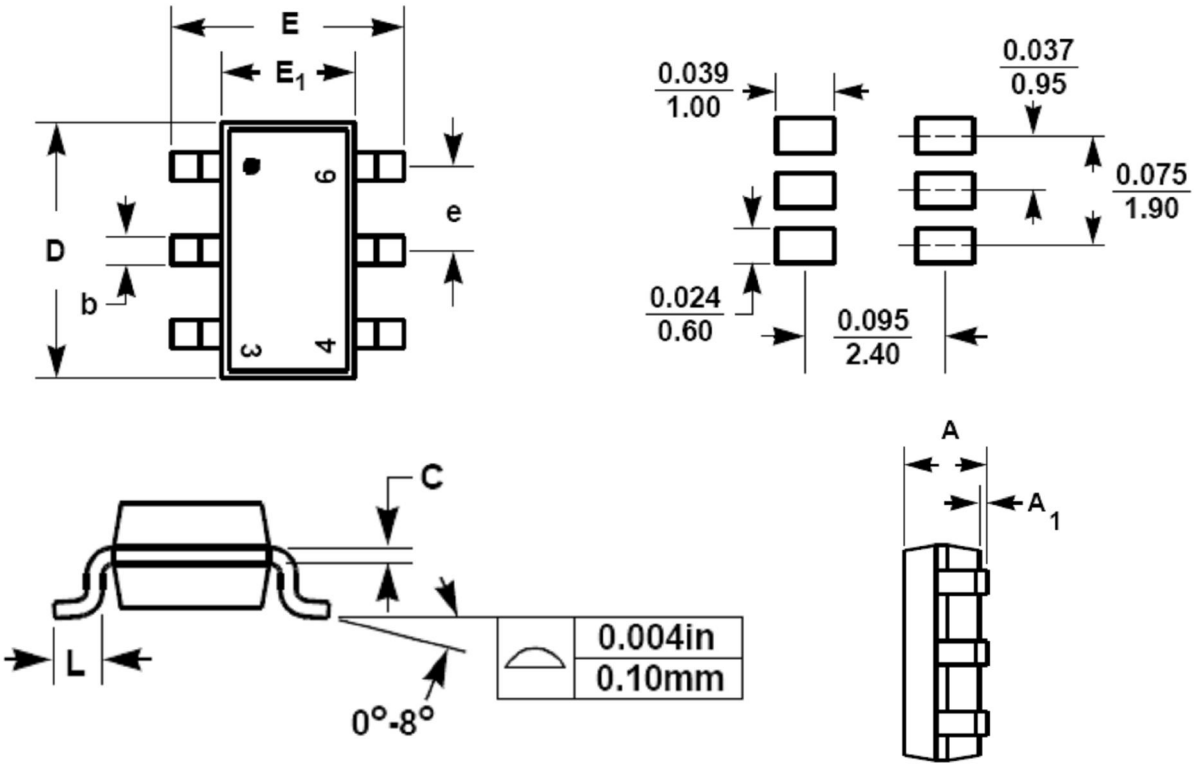
①The maximum current rating is limited by bond-wires.

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 TA =25°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 ºC

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℃ or 150℃ @ 80% of Max V_{DSS}/V_{CES}/VR	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	T_j=125℃ or 150℃ @ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices