SILICON (Si) POWER MOSFET A CED11P10



CED11P10

-100V ▲ 220mΩ ▲ -7A ▲ Si MOSFET

SILICON Si MOSFET ▲ THT type P-channel enhancement mode UL94V-0 rated flame retardant epoxy TO251 (E-PAK) package Super high dense cell density for extremely low R_{DS(ON)} High power and current handling capability







MAXIMUM RATINGS

Parameter (T_c = 25°C, unless otherwise noted)		Characteristics
Drain-Source Voltage	V _{DS}	-100V
Gate-Source Voltage	V _{GS}	±20V
Continuous Drain Current	Ι _D	-7A
Pulsed Drain Current Note 1	I _{DM}	-28A
Maximum Power Dissipation at T _c = 25°C	PD	31W
Power Dissipation Derating above 25°C	ΔP _D	0.25W/°C
Operating and Storage Temperature Range	T _J , T _{STG}	-55°C to +150°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Limit
Thermal Resistance, Junction-to-Case	R _{TH_JC}	4°C/W
Thermal Resistance, Junction-to-Ambient Note 2	R _{TH_JA}	50°C/W

APPLICATIONS

DC/DC	DC	Load	Power	USB
Converter	Fan	Switches	Banks	Storage
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PIN DESCRIPTION



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ELECTRICAL CHARACTERISTICS A T_c = 25°C, unless otherwise noted

Item	Condition	Symbol	Min.	Тур.	Max.	Unit	
Off Characteristics							
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = -250μA	BV _{DSS}	-60			V	
Zero Gate Voltage Drain Current	$V_{DS} = -100V, V_{GS} = 0V$	I _{DSS}			-1	μA	
Gate Body Leakage Current, Forward	$V_{GS} = 20V, V_{DS} = 0V$	I _{GSSF}			100	nA	
Gate Body Leakage Current, Reverse	V_{GS} = -20V, V_{DS} = 0V	I _{GSSR}			-100	nA	
On Characteristics Note 4							
Gate Threshold Voltage	$V_{GS} = V_{DS}, I_{D} = -250 \mu A$	V _{GS(th)}	-2		-4	V	
Static Drain-Source On-Resistance	$V_{GS} = -10V, I_D = -4A$	R _{DS(ON)}		220	270	mΩ	
Dynamic Characteristics Note 4							
Input Capacitance	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	Ciss		680		ρF	
Output Capacitance	$V_{DS} = -15V$, $V_{GS} = 0V$, f = 1MHz	Coss		100		pF	
Reverse Transfer Capacitance	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	C _{RSS}		60		pF	
Switching Characteristics Note 4							
Turn-On Delay Time	$V_{DD} = -80V$, $V_{GS} = -10V$, $I_D = -7A$, $R_{G(ext)} = 6\Omega$			13		ns	
, Turn-On Rise Time	$V_{DD} = -80V$, $V_{GS} = -10V$, $I_D = -7A$, $R_{G(ext)} = 6\Omega$	t _R		7		ns	
Turn-Off Delay Time	$V_{DD} = -80V, V_{GS} = -10V, I_D = -7A, R_{G(ext)} = 6\Omega$	t _{D(OFF)}		29		ns	
Turn-Off Fall Time	$V_{DD} = -80V, V_{GS} = -10V, I_D = -7A, R_{G(ext)} = 6\Omega$	t _F		5		ns	
Total Gate Charge	$V_{DS} = -80V, V_{GS} = -10V, I_{D} = -7A$	Q _G		16		nC	
Gate Source Charge	$V_{DS} = -80V, V_{GS} = -10V, I_{D} = -7A$	Q _{GS}		2		nC	
Gate Drain Charge	V_{DS} = -80V, V_{GS} = -10V, I_{D} = -7A	\mathbf{Q}_{GD}		6		nC	
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode					-	•	
Forward Current Note 2		Is			-/	А	
Drain-Source Diode Forward Voltage ^{Note 3}	$V_{GS} = 0V, I_{S} = -1A$	V _{SD}			-1.2	V	

Notes

- 1: Repetitive Rating: Pulse width limited by maximum junction temperature
- 2: Surface Mounted on FR4 Board, $t \le 10$ sec.
- 3: Pulse Test: Pulse Width \leq 300µs, Duty Cycle \leq 2%.
- 4: Guaranteed by design, not subject to production testing.



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CET MOS

REFERENCE DATA ▲ TYPICAL DEVICE PERFORMANCE



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Fig. 9 - Breakdown Voltage Variation vs. Temperature









Fig. 11 • Switching Waveforms



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Square Wave Pulse Duration (msec)

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PACKAGE OUTLINE





Sym	Millimeters (Min.)	Millimeters (Typ.)	Millimeters (Max.)
А	2.180	-	2.400
A1	0.860	-	1.500
b	0.700	-	0.960
b1	0.700	-	0.860
С	0.400	-	0.610
D1	5.400	-	6.630
E	6.050	-	7.010
E1	4.950	-	5.460
е	1.980	-	2.590
F	0.400	-	0.890
L	8.500	-	9.650
L1	0.500	-	1.800

ORDERING INFORMATION

Part Number	Package	Packing	Tube Qty.	Inner Box Qty.	Outer Box Qty.
CED11P10	TO251 (E-PAK)	Tube	80pcs	4,000pcs	16,000pcs

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PART MARKING



DATE CODE

Example: 11S4Z



| Product Type Z: Pb-free G: Green Product

Coding list for "Day"									
1 01	2 02	3 03	4 04	5 05	6 06	7 07	8 08	9 09	A 10
B 11	C	D 13	E 14	F 15	G 16	H 17	 18	J 19	K 20
L 21	M 22	N 23	0 24	P 25	Q 26	R 27	S 28	T 29	U 30
V 31									

Coding list for "Month"

1	2	3	4	5	6
Jan	Feb	Mar	Apr	May	Jun
7	8	9	A	B	C
Jul	Aug	Sep	Oct	Nov	Dec

Coding list for "Year"



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RECOMMENDED WAVE SOLDERING PROFILE ▲ THT PACKAGE



Classification wave soldering profile ▲ Refer to EN 61760-1: 2006

Profile Features		Value Sn-Pb Assembly	Value A Pb-free Assembly
Preheat temperature min.	T_{smin}	100 °C	100 °C
Preheat temperature typical	T _{s typ}	120 °C	120 °C
Preheat temperature max.	T_{smax}	130 °C	130 °C
Preheat time t_s from $T_{s min}$ to $T_{s max}$	ts	70 seconds	70 seconds
Peak temperature	Tp	235 °C to 260 °C	245 °C to 260 °C
Time of actual peak temperature	tp	Max. 10 seconds Max. 5 second each wave	Max. 10 seconds Max. 5 second each wave
Ramp-down date min.		~ 2 °C/second	~ 2 °C/second
Ramp-down rate typical		~ 3.5 °C/second	~ 3.5 °C/second
Ramp-down rate max.		~ 5 °C/second	~ 5 °C/second
Time 25°C to 25°C		4 minutes	4 minutes



REVISION TABLE

Revision	Date	Status	Notes
001	30/09/2022	Initial release	Initial publication

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