

**SuperMOS – SOT-23 -30V  $BV_{DSS}$ ,  $38m\Omega$   $R_{DS(on)}$ , -4.5A  $I_D$  P-channel MOSFET**

**1. Description**

The CJ3407-ES is P-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 CJ3407-ES is Pb-free.

**2. Features**

- 30V,  $R_{DS(ON)} < 38m\Omega$  @  $V_{GS} = -10V, I_D = -4.5A$
- $R_{DS(ON)} < 55m\Omega$  @  $V_{GS} = -4.5V, I_D = -3.0A$
- Fast Switching
- 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	Material	Quantity per reel	Flammability Rating
CJ3407-ES	SOT-23	Halogen free	3,000 PCS	UL 94V-0

Table-1 Ordering information

**5. Pin Configuration and Functions**

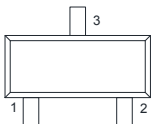
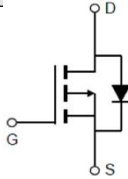
Pin	Function	Outline	Circuit Diagram
1	Gate		
2	Source		
3	Drain		

Table-2 Pin configuration

## 6. Specification

### Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$BV_{DSS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ\text{C}$	-4.5
		$T_A=100^\circ\text{C}$	-3.5
Maximum Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	1.5
		$T_A=100^\circ\text{C}$	0.8
Pulsed Drain Current	$I_{DM}$	-18	A
Operating Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

### Thermal resistance ratings

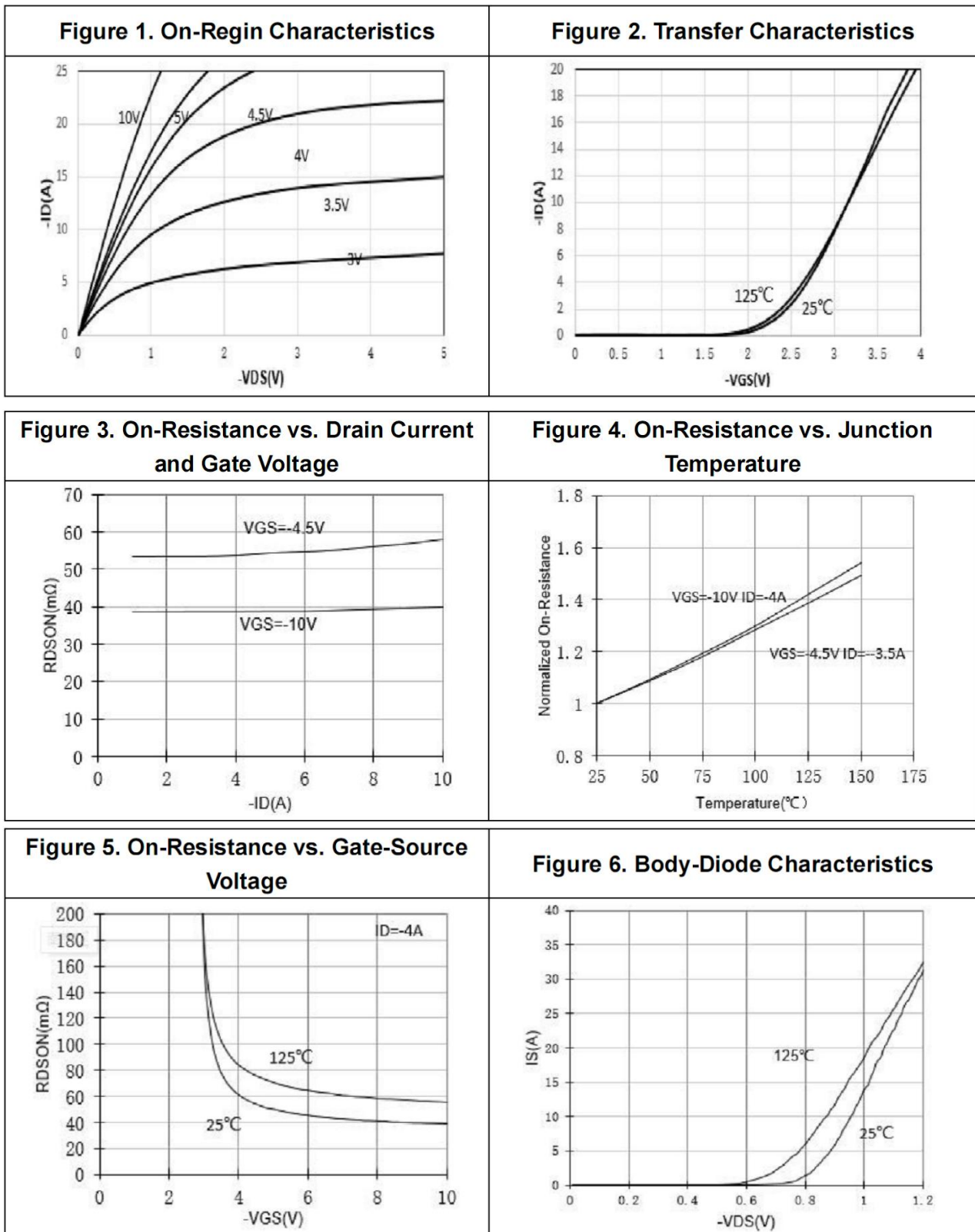
Single Operation				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$R_{\theta JA}$	105		$^\circ\text{C}/\text{W}$
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	63		

## Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.9	-1.5	-2.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.5A$		38	48	m $\Omega$
		$V_{GS}=-4.5V, I_D=-3.0A$		55	65	
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V$		550		pF
Output Capacitance	$C_{OSS}$	$V_{DS}=-15V$		75		
Reverse Transfer Capacitance	$C_{RSS}$	$f=1MHz$		63		
Gate Resistance	$R_g$	$f=1MHz$		10.5		$\Omega$
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=-10V$		6.5		nC
Gate-to-Source Charge	$Q_{GS}$	$V_{DS}=-15V$		1.1		
Gate-to-Drain Charge	$Q_{GD}$	$I_D=-4.5A$		1.3		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=-10V$		14		ns
Rise Time	$t_r$	$V_{DS}=-15V$		60		
Turn-Off Delay Time	$t_{d(OFF)}$	$R_L=3.5\Omega$		19		
Fall Time	$t_f$	$R_G=3\Omega$		11		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1.0A$		-0.7	-1	V
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0V, I_{SD}=-4.5A,$		13.0		ns
Reverse Recovery Charge	$Q_{rr}$	$di/dt=100A/\mu s$		2.5		nC

7. Typical Characteristic



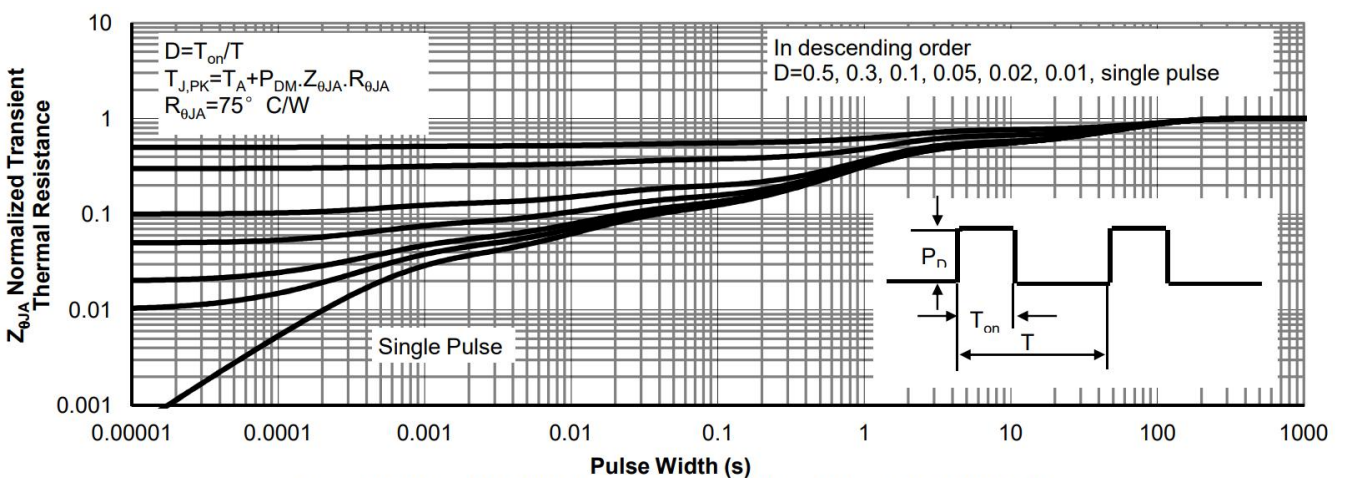
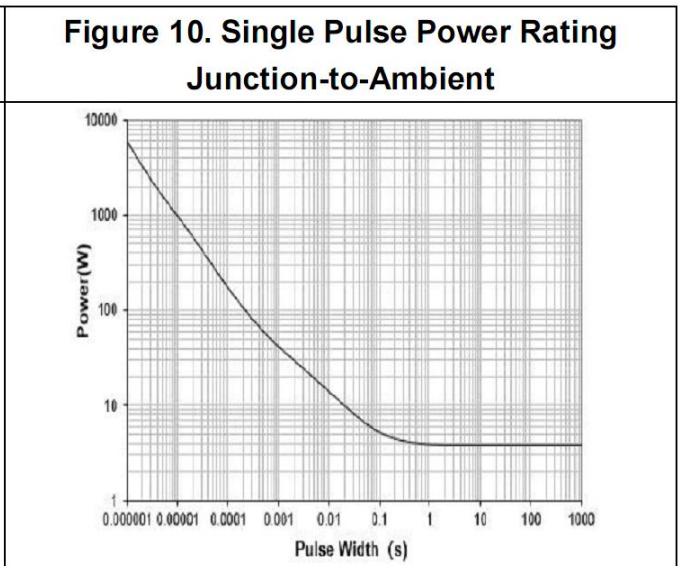
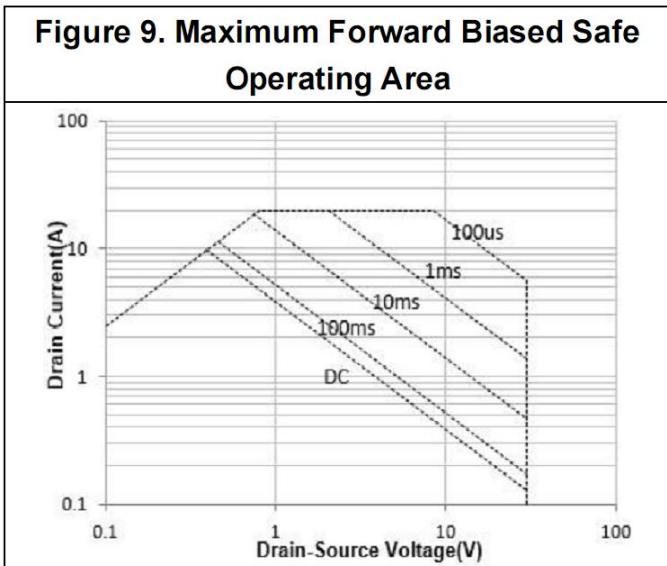
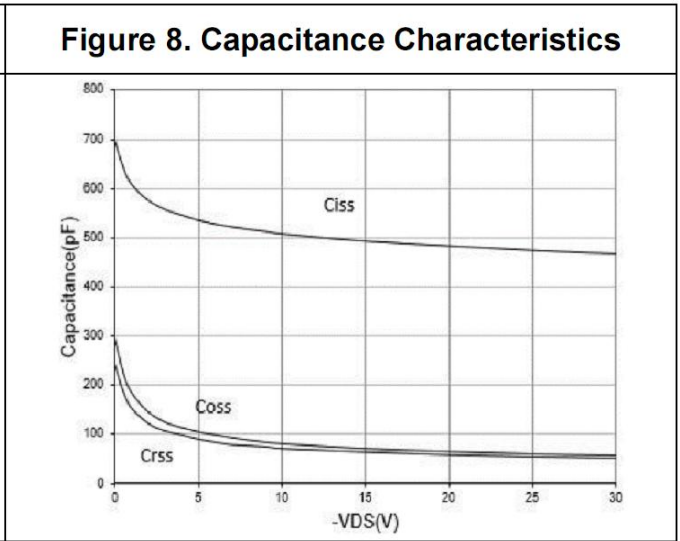
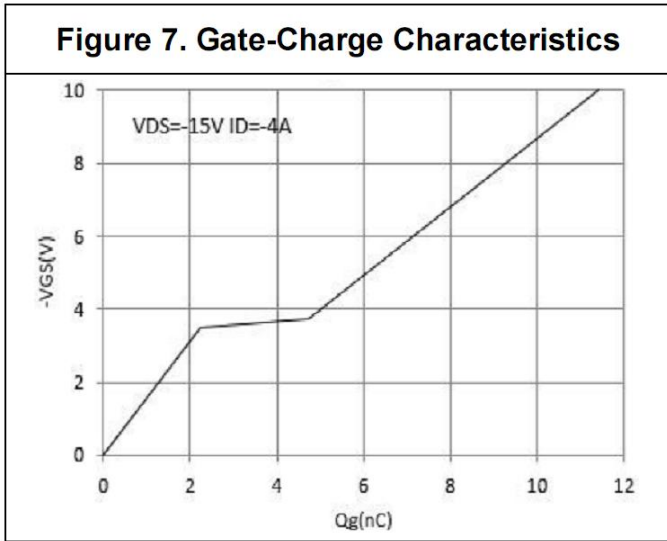
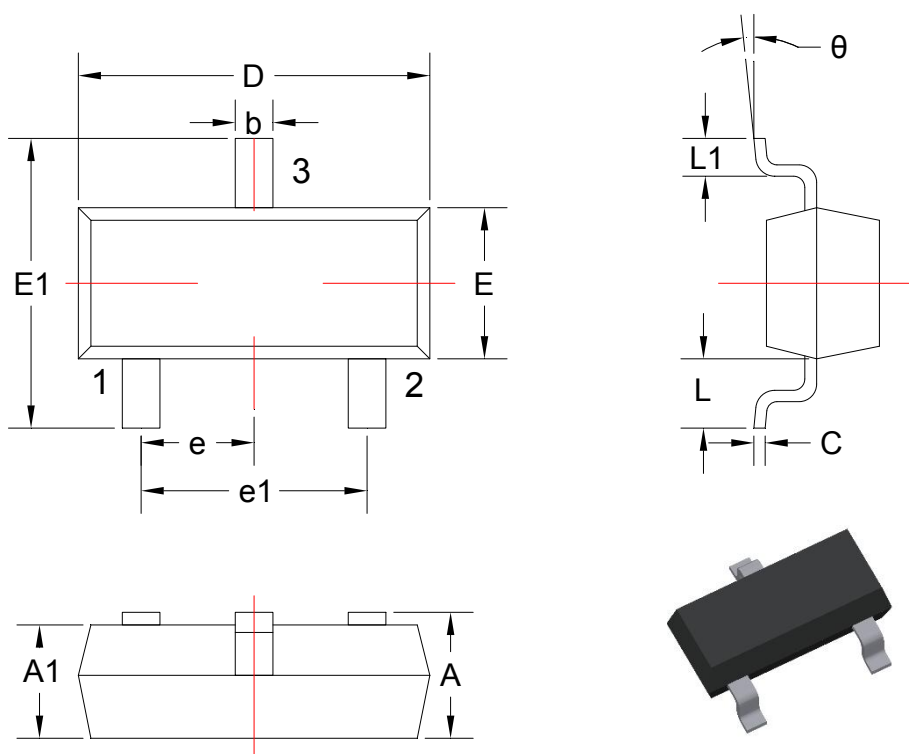


Figure 11: Normalized Maximum Transient Thermal Impedance(Note E)

8. Dimension and Patterns (SOT-23)



COMMON DIMENSIONS: UNITS OF MEASURE=MILLIMETER

Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	0.900	1.150	E1	2.250	2.550
A1	0.900	1.050	e	0.950TYP	
b	0.300	0.500	e1	1.800	2.000
c	0.080	0.150	L	0.550REF	
D	2.800	3.00	L1	0.300	0.500
E	1.200	1.400	θ	0°	8°

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