

SOT-23 Plastic-Encapsulate Transistors

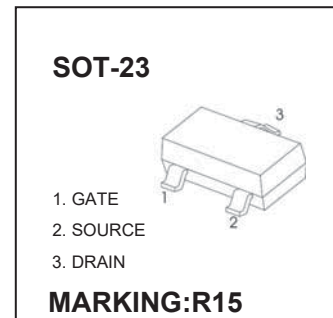
2SK3415 P-Channel 20-V(D-S) MOSFET

FEATURE

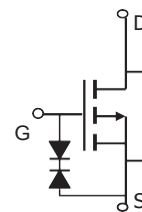
- Excellent $R_{DS(ON)}$, low gate charge, low gate voltages

Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	
Continuous Drain Current ($t \leq 10\text{s}$)	I_D	-4.0	A
Maximum Power Dissipation ($t \leq 10\text{s}$)	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$



Equivalent Circuit

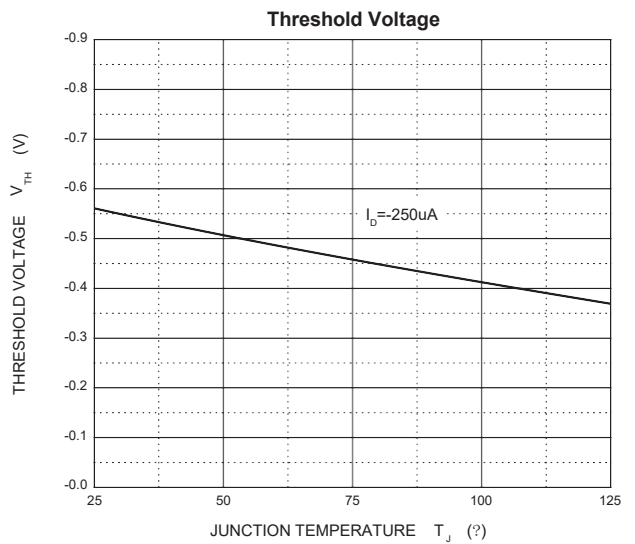
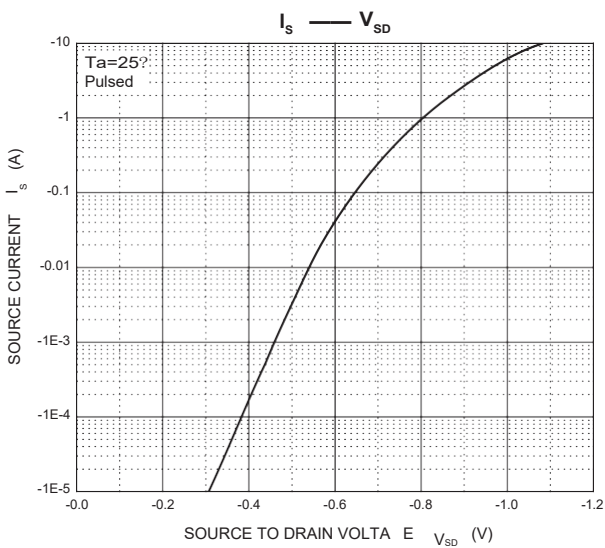
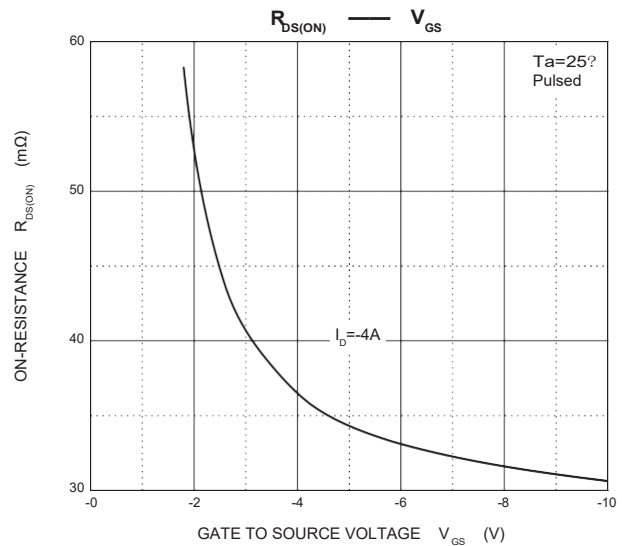
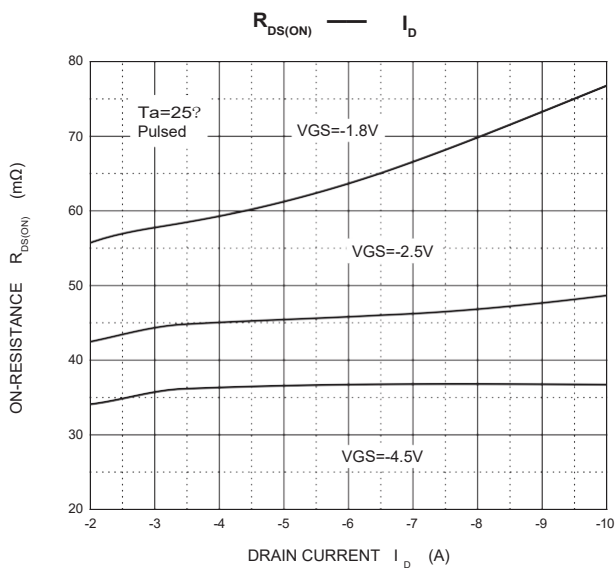
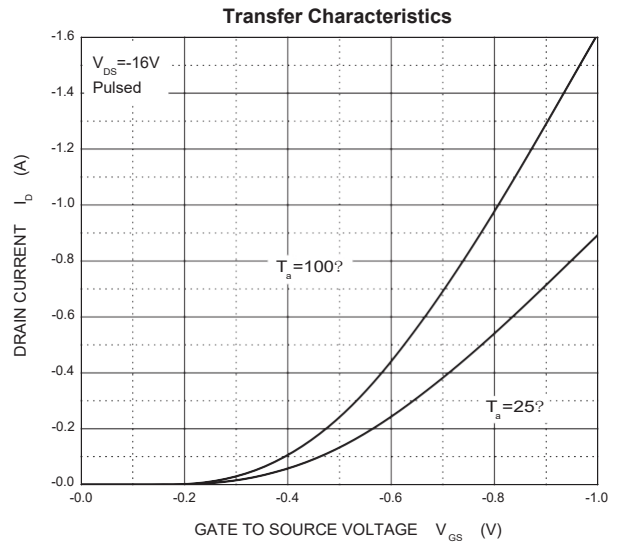
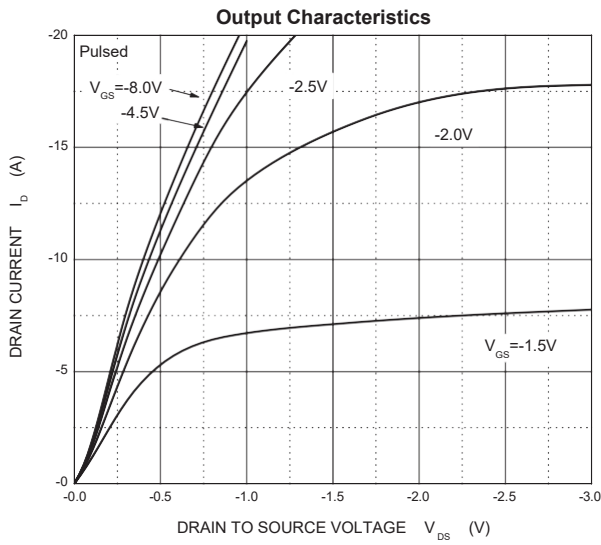


MOSFET ELECTRICAL CHARACTERISTICS $T_a=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	-20			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-0.3	-0.56	-1	
Gate-body leakage current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 8\text{V}$			± 10	μA
		$V_{DS} = 0\text{V}, V_{GS} = \pm 4.5\text{V}$			± 1	
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}$			-1	
Drain-source on-state resistance(note1)	$R_{DS(on)}$	$V_{GS} = -4.5\text{V}, I_D = -4\text{A}$		0.037	0.050	Ω
		$V_{GS} = -2.5\text{V}, I_D = -4\text{A}$		0.045	0.060	
		$V_{GS} = -1.8\text{V}, I_D = -2\text{A}$		0.080	0.100	
Forward transconductance(note2)	g_{FS}	$V_{DS} = -5\text{V}, I_D = -4\text{A}$	8			S
Body diode voltage(note2)	V_{SD}	$I_S = -1\text{A}, V_{GS} = 0\text{V}$			-1	V
Input capacitance	C_{iss}	$V_{DS} = -10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		1450		pF
Output capacitance	C_{oss}			205		
Reverse transfer capacitance	C_{rss}			160		
Gate resistance	R_g	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		6.5		Ω
Total gate charge	Q_g	$V_{DS} = -10\text{V}, V_{GS} = -4.5\text{V}, I_D = -4\text{A}$		17.2		nC
Gate-Source charge	Q_{gs}			1.3		
Gate-drain charge	Q_{gd}			4.5		
Turn-on delay time (note3)	$t_{d(on)}$	$V_{DS} = -10\text{V}, V_{GS} = -4.5\text{V}$ $R_{GEN} = 3\Omega, R_L = 2.5\Omega,$		9.5		ns
Turn-on rise time(note3)	t_r			17		
Turn-off delay time(note3)	$t_{d(off)}$			94		
Turn-off fall time(note3)	t_f			35		

- Notes:**
1. Repetitive rating, pulse width limited by junction temperature.
 2. Pulse Test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
 3. These parameters have no way to verify.

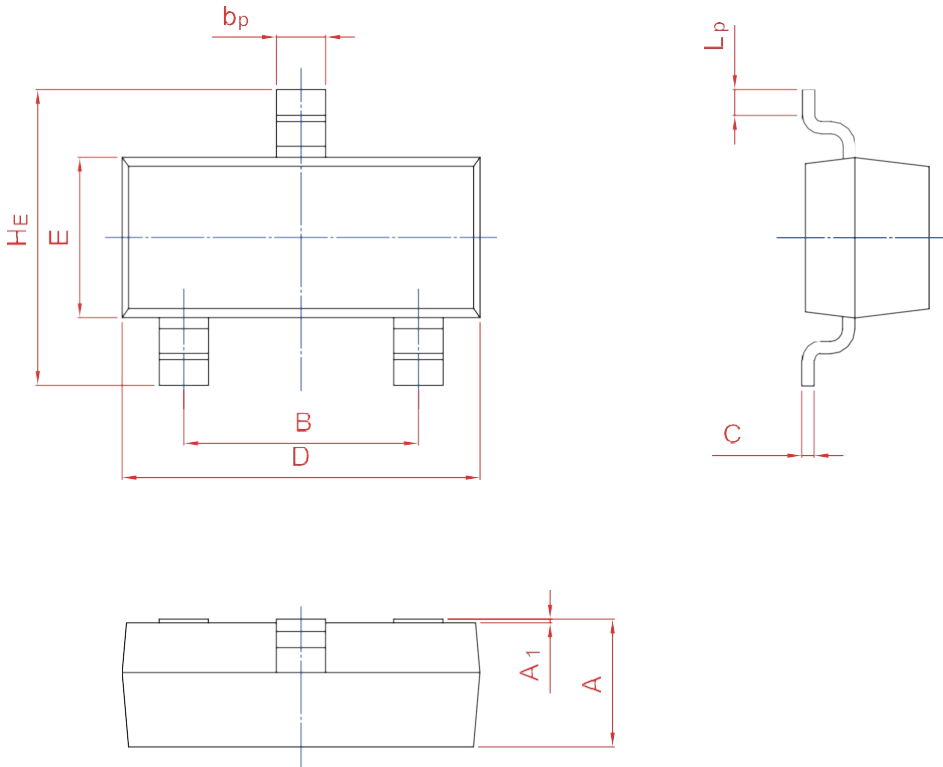
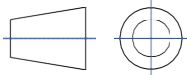
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b _p	C	D	E	HE	A ₁	L _p
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20