P-Channel Enhancement Mode MOSFET

Primary characteristics			
Symbol	**Parameter**	**Value**	**Unit**
I_D	Continuous drain current (@T_C=25°C)	-7.0	A
V_{DS}	Drain source voltage	-20	V

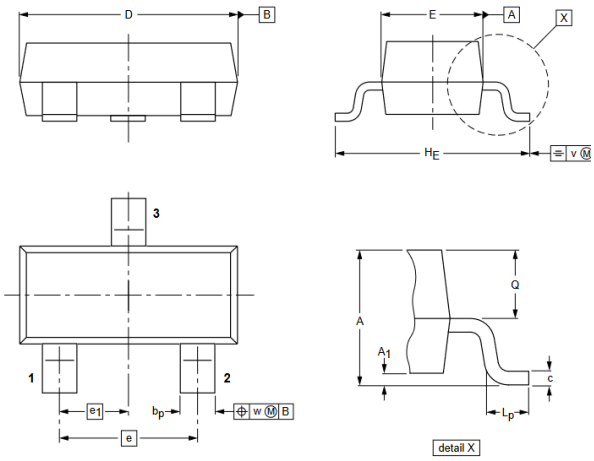
Features

- **SOT-23** case for easy automatic insertion
- Pb-free and **RoHS** compliant

Application

- Quick charge
- Electronic cigarette
- Uninterruptable power supply

Case dimensions



1 – Gate; 2 – Source; 3 - Drain

SOT-23 (TO-236AB)

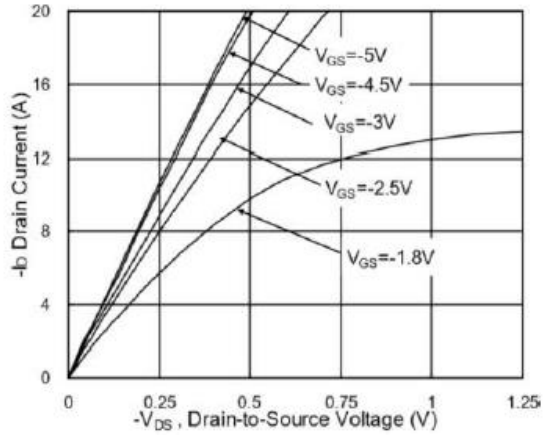
Unit	A	A_1max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.0 ±0.1	0.1	0.43 ±0.05	0.12 ±0.03	2.9 ±0.1	1.3 ±0.1	1.9	0.95	2.3 ±0.2	0.3 ±0.15	0.5 ±0.05	0.2	0.1

Absolute maximum ratings (T_A = 25°C unless otherwise noted)			
Characteristic	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	-20	V
Gate-source voltage	V_{GS}	±12	V
Continuous drain current	I_D	-7.0	A
Pulsed drain current [1)]	I_{DM}	-23.8	A
Power Dissipation	P_D	2.0	W
Thermal resistance junction-ambient [1)]	$R_{\theta JA}$	62.5	°C/W
Operating junction temperature range	T_J, T_{STG}	-55 ~ 150	°C

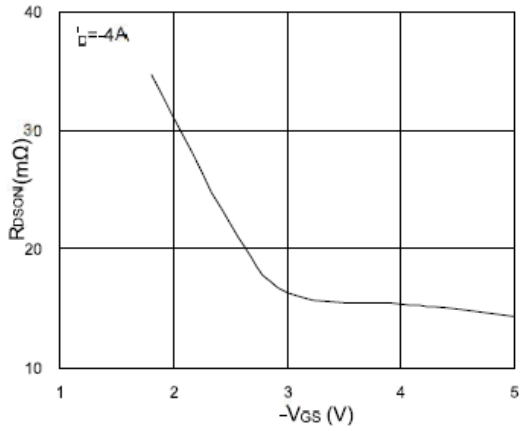
Electrical characteristics (T_A = 25°C)						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Drain-source breakdown voltage	V_{GS}=0V, I_D=250μA	$V_{(BR)DSS}$	-20	-22	-	V
Zero gate voltage drain current	V_{DS}=-20V, V_{GS}=0V	I_{DSS}	-	-	1.0	μA
Gate to body leakage current	V_{GS}=±12V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate threshold voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(TH)}$	-0.5	-0.7	-1.2	V
Drain-source on-state resistance [3)]	V_{GS}=4.5V, I_D=6.0A	$R_{DS(ON)}$	-	20	25	mΩ
	V_{GS}=2.5V, I_D=5.0A		-	28	35	
Dynamic electrical characteristics						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Input capacitance	V_{DS}=10V V_{GS}=0V f=1.0MHz	C_{iss}	-	2000	-	pF
Output capacitance		C_{oss}	-	242	-	
Reverse transfer capacitance		C_{rss}	-	231	-	
Total gate charge	V_{DS}=10V V_{GS}=4.5V I_D=3.0A	Q_g	-	15.3	-	nC
Gate source charge		Q_{gs}	-	2.2	-	
Gate drain (“Miller”) charge		Q_{gd}	-	4.4	-	
Switching characteristics						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Turn on delay time	V_{DS}=10V V_{GS}=4.5V I_D=7.0A R_G=2.5Ω	$t_{d(on)}$	-	10	-	ns
Turn on rise time		t_r	-	31	-	
Turn off delay time		$t_{d(off)}$	-	28	-	
Turn off fall time		t_f	-	7.8	-	
Source drain diode characteristics						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Drain-source diode forward voltage [3)]	I_S=7.0A, V_{GS}=0V	V_{SD}	-	-0.8	1.2	V

Typical characteristics

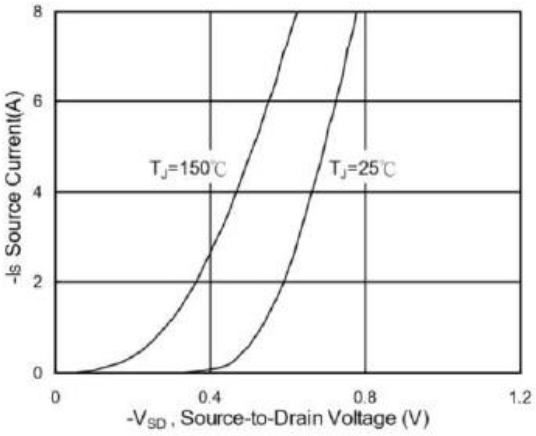
Typical Output



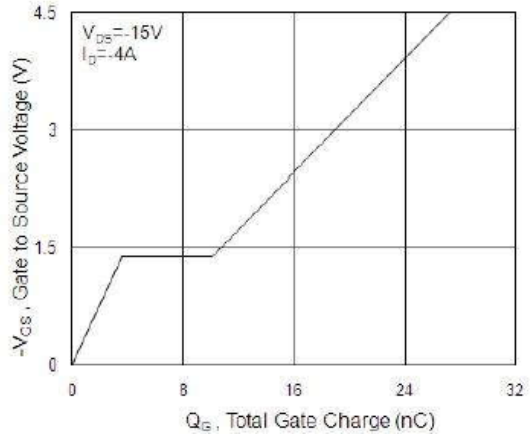
On-Resistance vs. Gate-Source



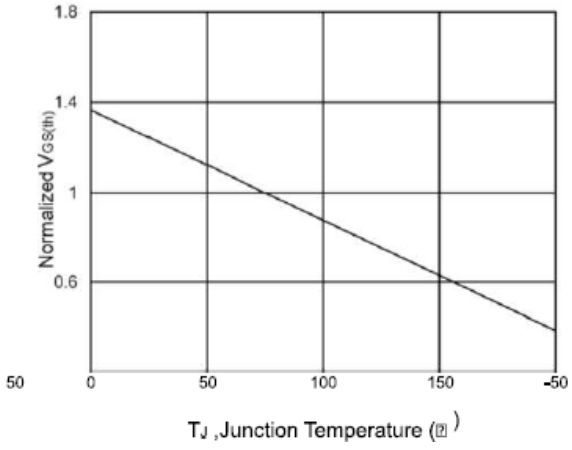
Forward characteristics of reverse



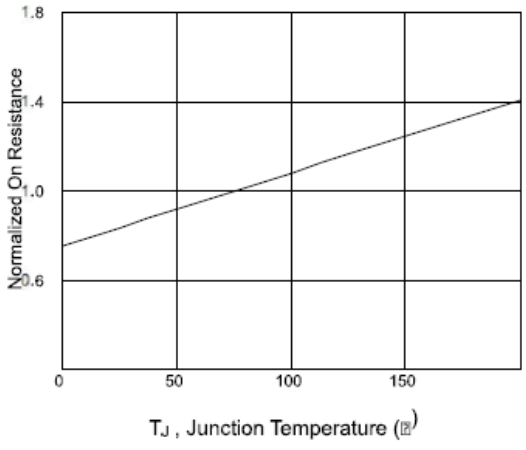
Gate-Charge Characteristics



Normalized $V_{GS(th)}$ vs. T_J

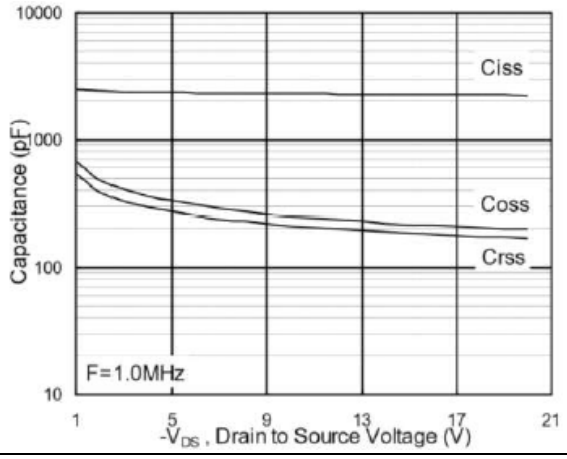


Normalized R_{DSON} vs. T_J

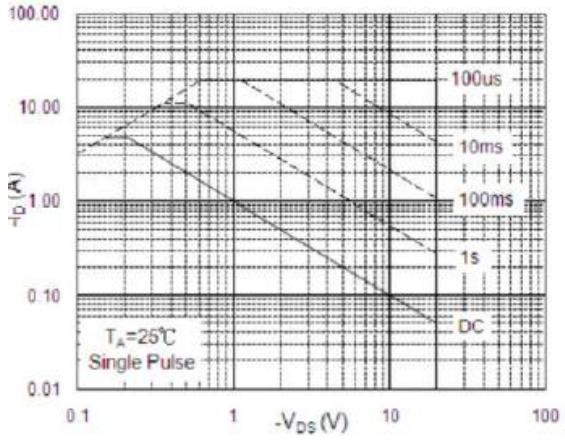


Typical characteristics

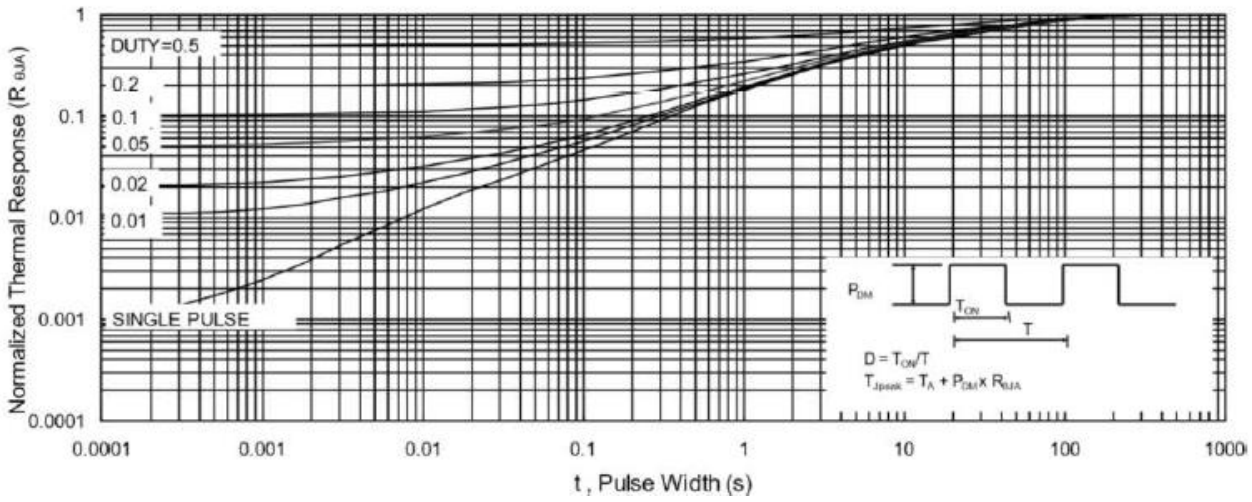
Capacitance



Safe Operating Area



Normalized maximum transient thermal impedance



Ordering information			
Part Number	**Package**	**Shipping Quantity**	**Dimensions**
AKS2307A	SOT-23	**3000 pcs / reel**	---

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