

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	52mΩ@-10V	-4.3A
	87mΩ@-4.5V	

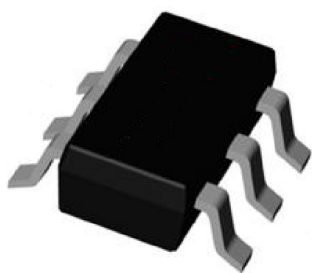
Feature

- High-speed switching
- Drive circuits can be simple
- Parallel use is easy
- Suffix "-Q1" for AEC-Q101

Application

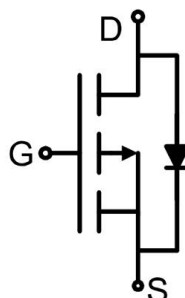
- Power Management in Note Book
- Switching Application
- Battery Powered System
- Load switch

Package

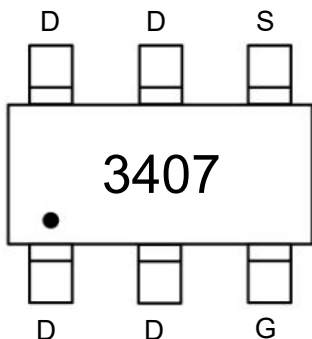


SOT-23-6L

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-4.3	A
Continuous Drain Current($T_A = 70^\circ\text{C}$)	$I_D(70^\circ\text{C})$	-3.5	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$)	I_{DM}	-20	A
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Case ¹⁾	$R_{\theta JC}$	40	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	90	$^\circ\text{C/W}$
Single Pulse Avalanche Energy ²⁾	E_{AS}	12	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.1	V
Drain-source on-resistance ³⁾	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.1A$		40	52	m Ω
		$V_{GS}=-4.5V, I_D=-3A$		59	87	
Gate Resistance	R_G	$V_{GS}=0V, f=1MHz$		12		Ω
Dynamic characteristics ⁴⁾						
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-4A$		7		S
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-15V, f=1MHz$		793		pF
Output Capacitance	C_{oss}			78		
Reverse Transfer Capacitance	C_{rss}			61		
Total Gate Charge	Q_g	$V_{DD}=-20V, V_{GS}=-4.5V, I_D=-3A$		8		nC
Gate-Source Charge	Q_{gs}			2.6		
Gate-Drain Charge	Q_{gd}			2.6		
Turn-on delay time	$t_{d(on)}$	$V_{DD}=-15V, V_{GS}=-10V, R_G=2.5\Omega, R_L=15\Omega, I_D=-1A$		5		nS
Turn-on rise time	t_r			6		
Turn-off delay time	$t_{d(off)}$			28		
Turn-off fall time	t_f			7		
Source-Drain Diode characteristics						
Diode Forward voltage ³⁾	V_{SD}	$I_{SD}=-1A, V_{GS}=0V, T_J=25^{\circ}C$			-1.0	V
Reverse Recovery Time	t_{rr}	$I_{SD}=-3A, V_{GS}=0V,$		125		nS
Reverse Recovery Charge	Q_{rr}	$dI/dt=100A/\mu s$		110		nC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The EAS data shows Max. rating. The test condition is $V_{DD} = -15V, V_{GS} = -10V, L = 0.1\text{mH}$.
- 3) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

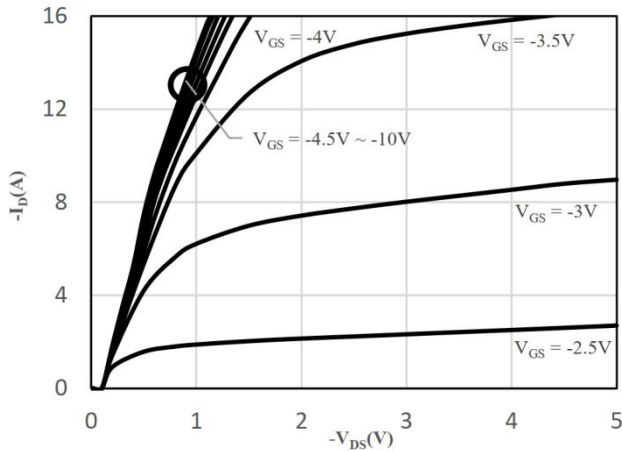


Fig 1 Typical Output Characteristics

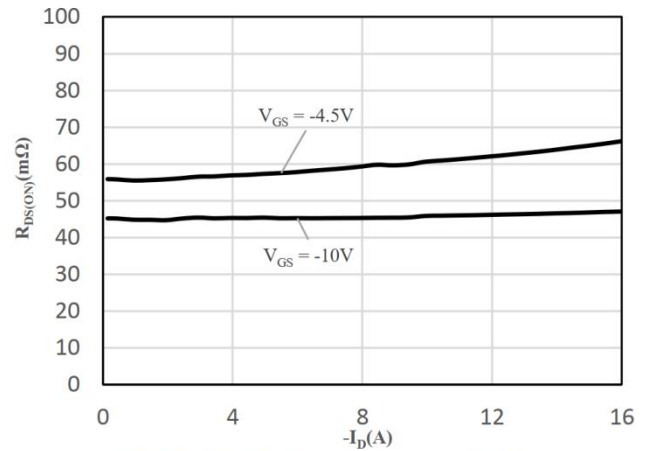


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

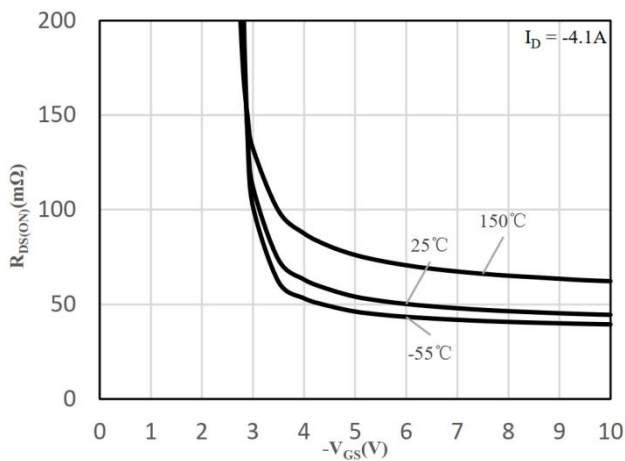


Fig 3 On-Resistance vs. Gate-Source Voltage

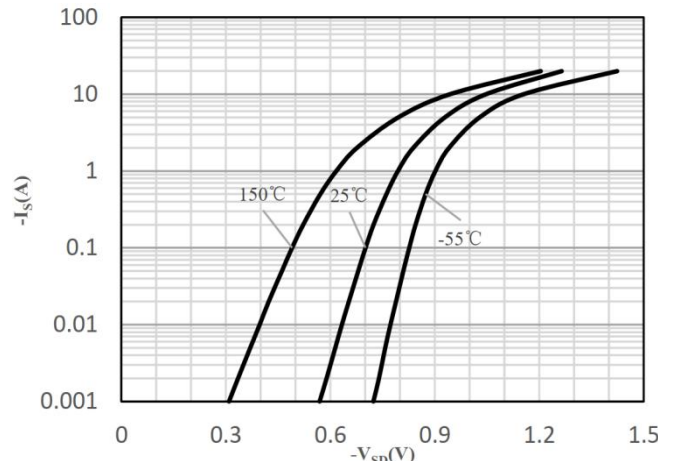


Fig 4 Body-Diode Characteristics

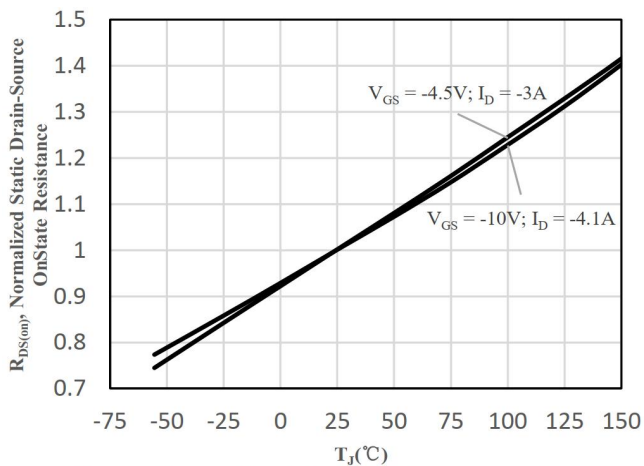


Fig 5 Normalized On-Resistance vs. Junction Temperature

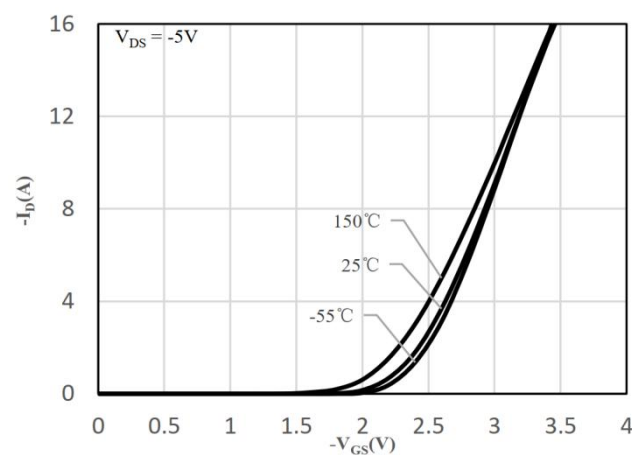
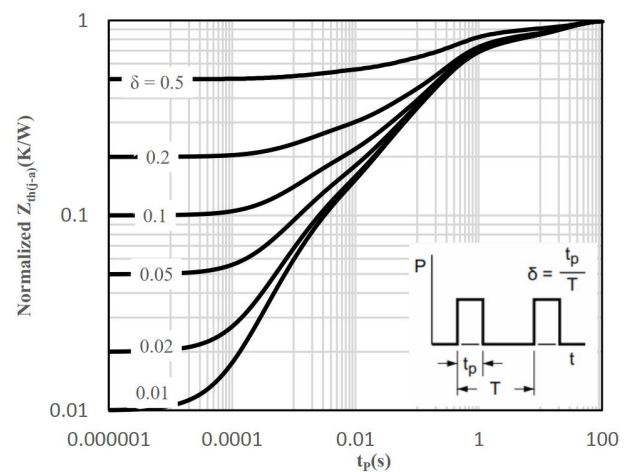
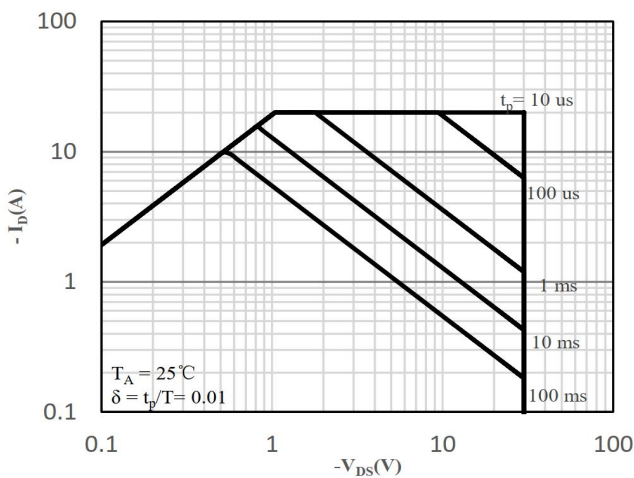
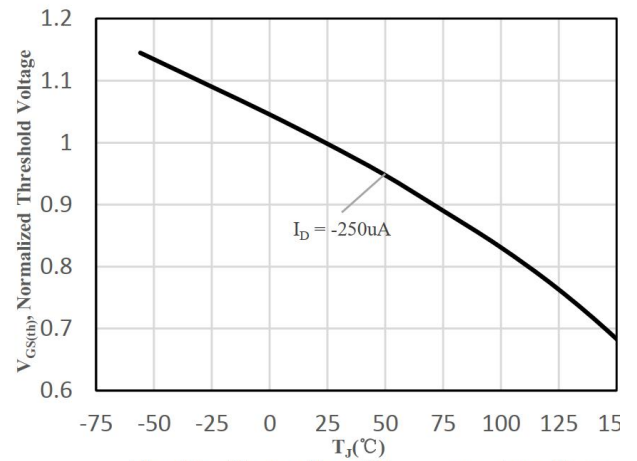
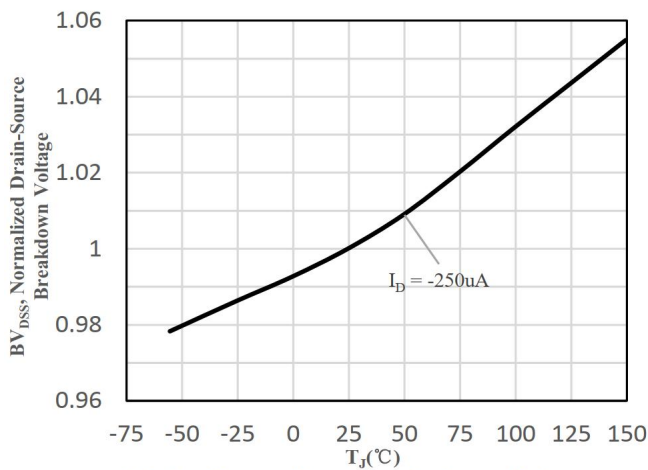
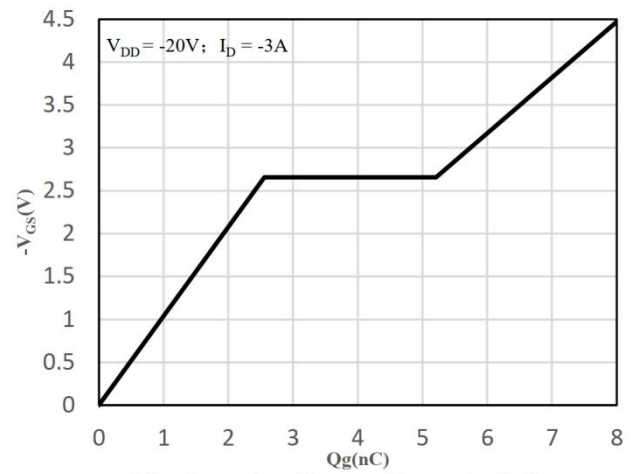
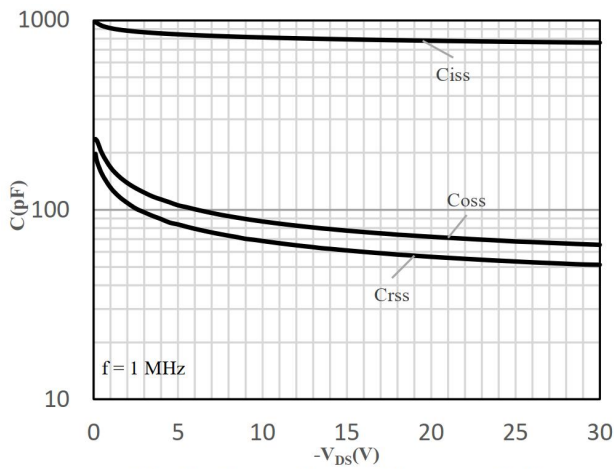
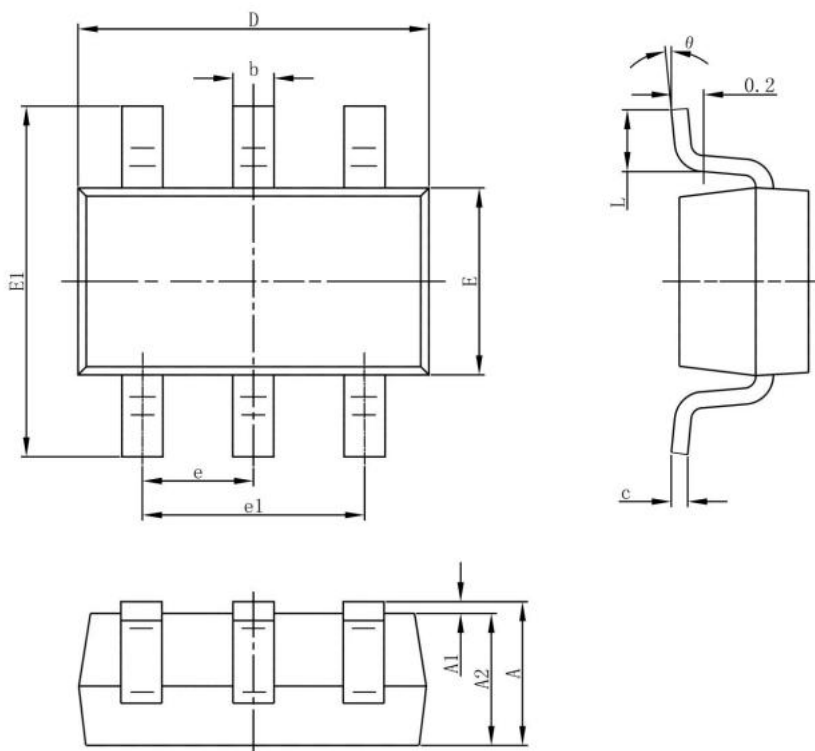


Fig 6 Transfer Characteristics

Typical Characteristics



SOT-23-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.020	1.300	0.040	0.051
A1	0.020	0.100	0.001	0.004
A2	1.000	1.200	0.039	0.047
b	0.350	0.450	0.014	0.018
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E1	2.600	3.000	0.102	0.118
E	1.500	1.700	0.059	0.067
e	0.900	1.000	0.035	0.039
e1	1.800	2.000	0.071	0.079
L	0.350	0.550	0.014	0.022
θ	0°	8°	0°	8°