/ Descriptions

SOT23-3 N MOS

N- CHANNEL MOSFET in a SOT23-3 Plastic Package.

/ Features

V_{DS} (V) = 30V

I_D = 5.5 A (V_{GS} = 20V)

$R_{DS(ON)}$ < 31mΩ (V_{GS} = 10V)

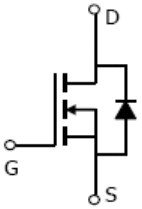
$R_{DS(ON)}$ < 43mΩ (V_{GS} = 4.5V)

AEC-Q101 Qualified to AEC-Q101 Standards for High Reliability, HF Product.

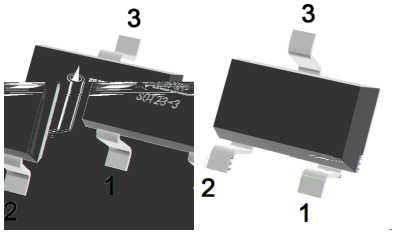
/ Applications

This device is suitable for use as a load switch or in PWM applications, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 S PIN 3 D

/ Marking

Marking	B4Q

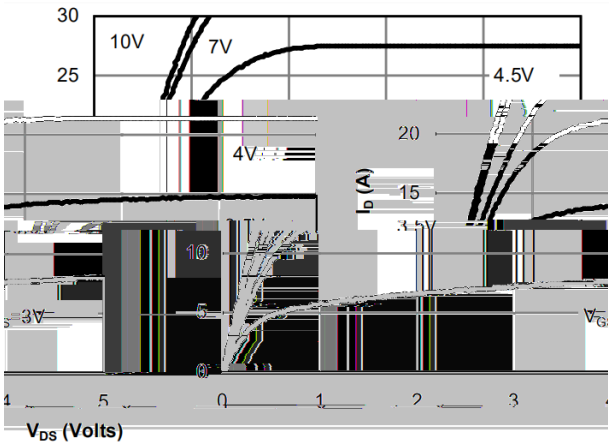
/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Drain Current – Continuous		I_D	5.5	A
Pulsed Drain Current		I_{DM}	19	A
Gate-Source Voltage		V_{GS}	±20	V
Total Power Dissipation		P_D	1.4	W
Operating and Storage Junction Temperature Range		T_J, T_{STG}	-55 to 150	℃
Maximum Junction-to-Ambient	t≤10s	$R_{\theta JA}$	90	℃/W
Maximum Junction-to-Ambient	Steady-State		125	
Maximum Junction-to-Lead		$R_{\theta JL}$	80	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V V_{GS}=0V			1	μA
		V_{DS}=24V V_{GS}=0V T_J=55℃			5	μA
Gate–Body Leakage.	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	1.0	1.5	2.5	V
Static Drain–Source On–Resistance	$R_{DS(on)(1)}$	V_{GS}=10V I_D=5.5A		20	31	mΩ
	$R_{DS(on)(2)}$	V_{GS}=4.5V I_D=4A		26	43	
Drain–Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=1A		0.77	1	V
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1MHz		380		pF
Output Capacitance	C_{oss}			165		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=10V, V_{DS}=15V, I_D=5.5A		5.2		nC
Total Gate Charge	$Q_{g(4.5V)}$			2.5		
Gate Source Charge	Q_{gs}			0.8		
Gate Drain Charge	Q_{gd}			1.3		
Turn–On Delay Time	$t_{d(on)}$	V_{GS}=10V R_L=3Ω V_{DS}=15V R_{GEN}=3Ω		4.5		ns
Turn–On Rise Time	t_r			2.5		
Turn–Off Delay Time	$t_{d(off)}$			14.5		
Turn–Off Fall Time	t_f			3.5		

/ Electrical Characteristic Curve



n-Region Characteristics

Fig 1: O

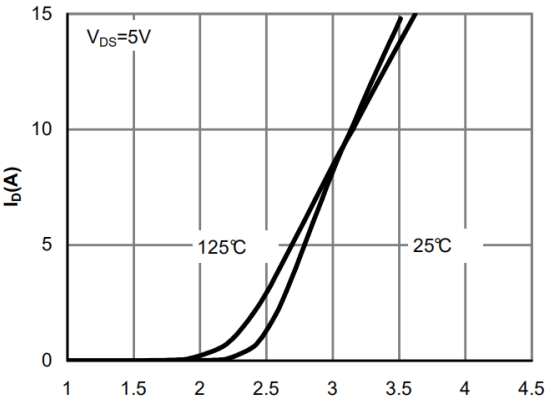
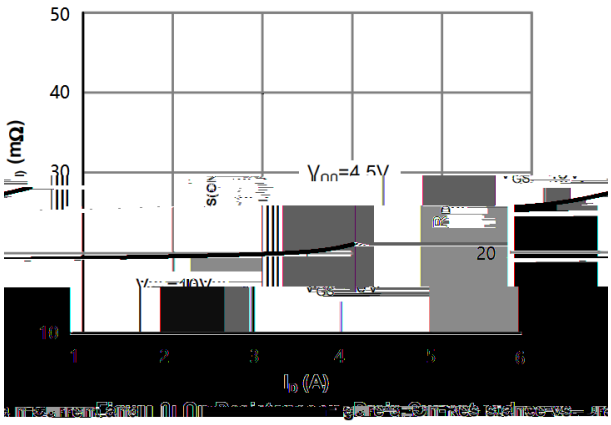


Figure 2: Transfer Characteristics



Gate Voltage

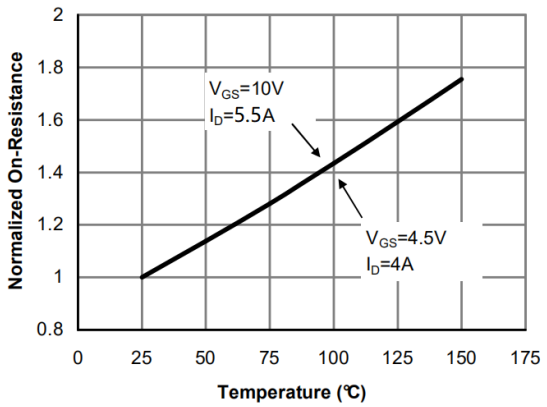
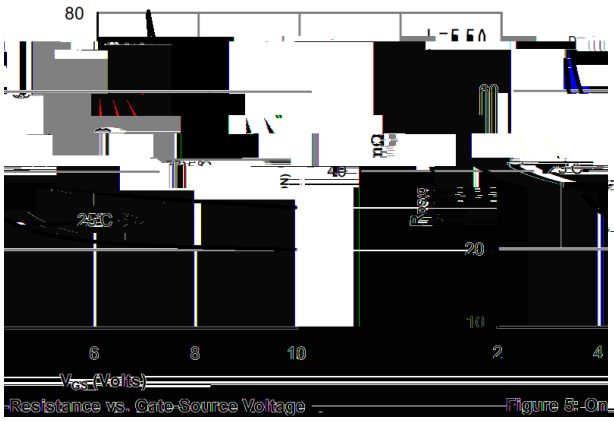


Figure 4: On-Resistance vs. Junction Temperature



Resistance vs. Gate-Source Voltage

Figure 5: On

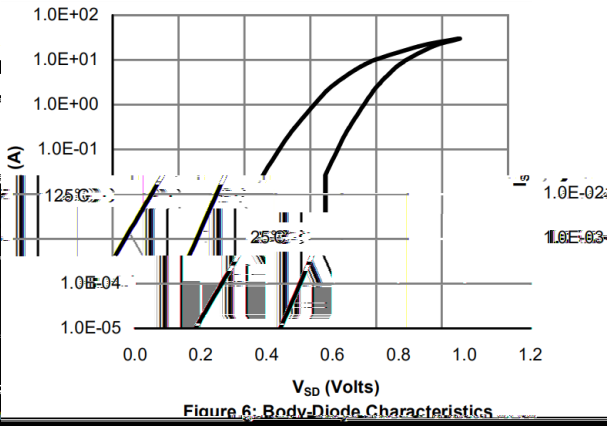


Figure 6: Body-Diode Characteristics

/ Electrical Characteristic Curve

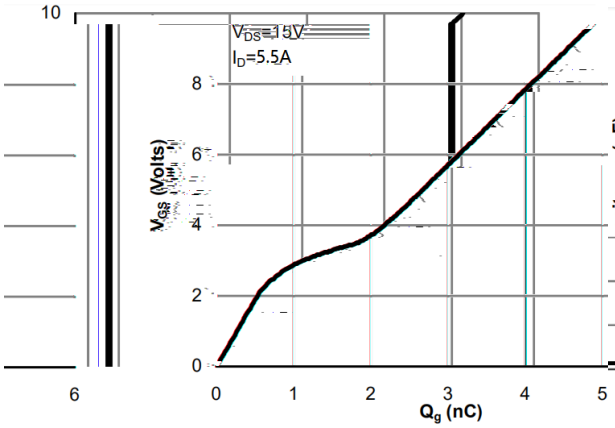


Figure 7: Gate-Charge Characteristics

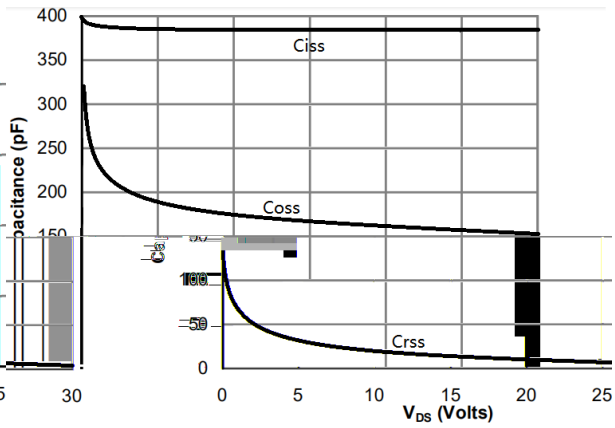


Figure 8: Capacitance Characteristics

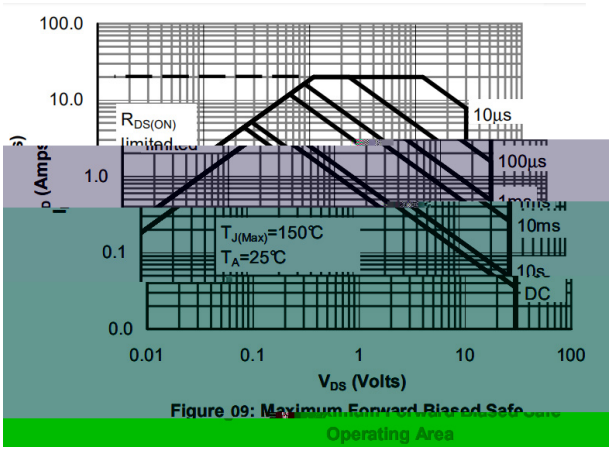


Figure 09: Maximum Forward Biased Safe

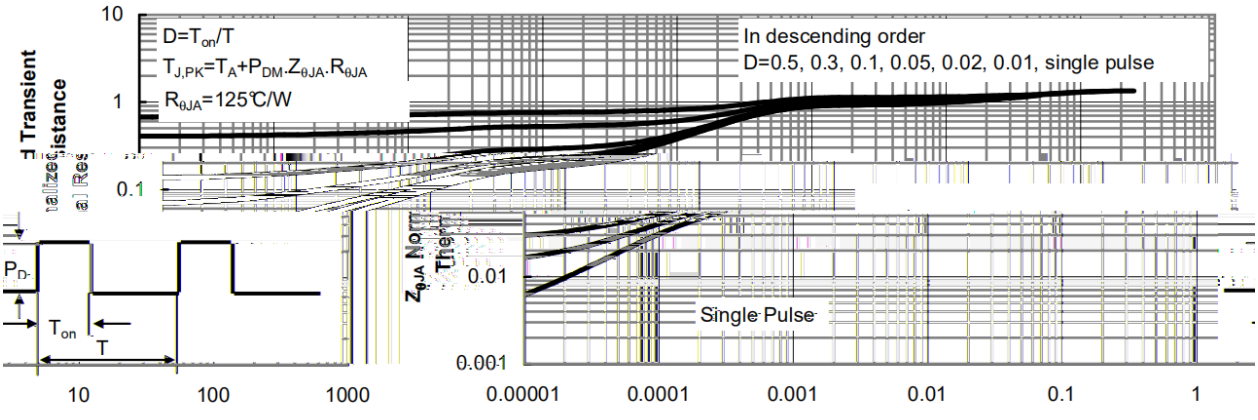


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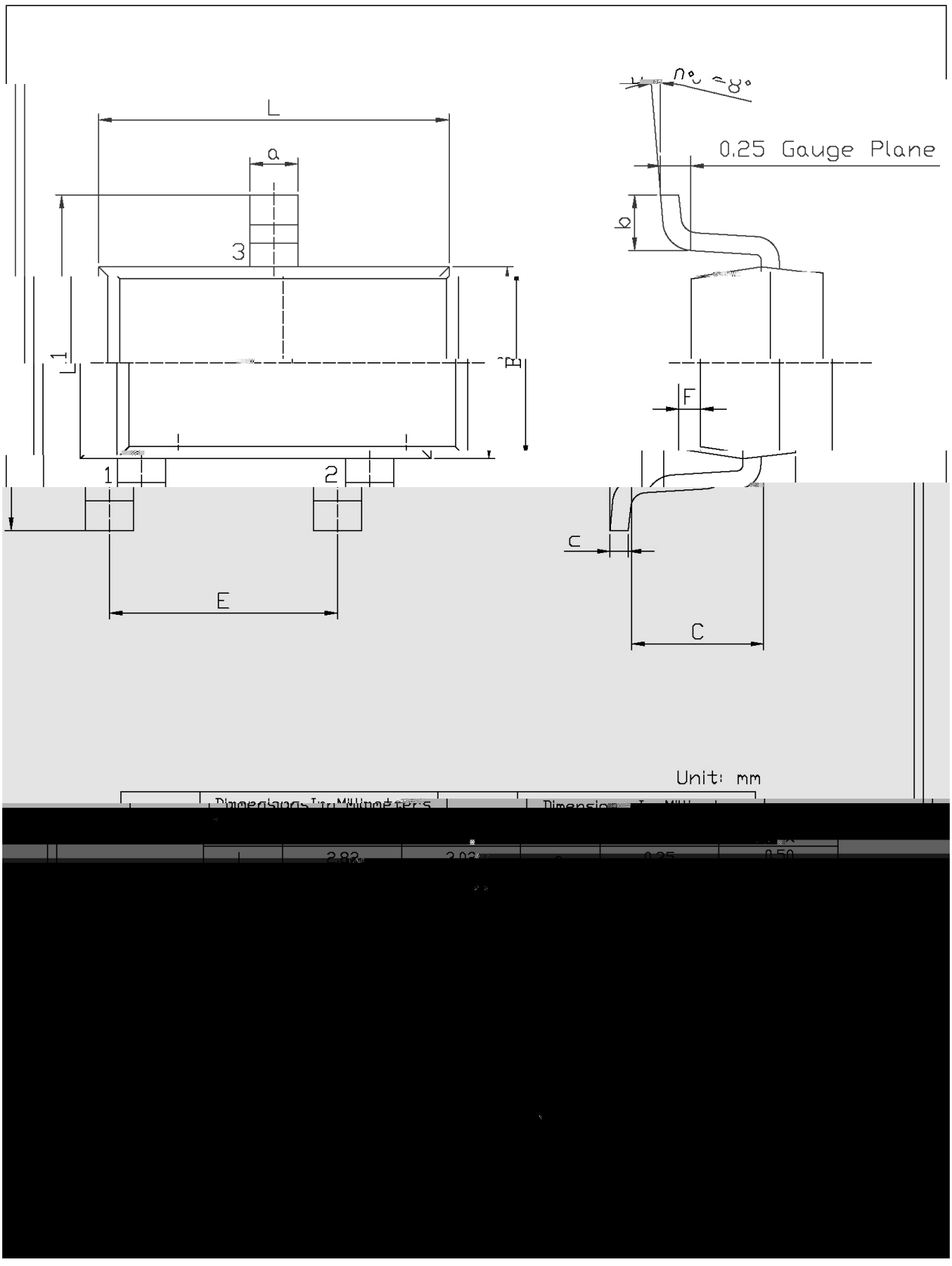
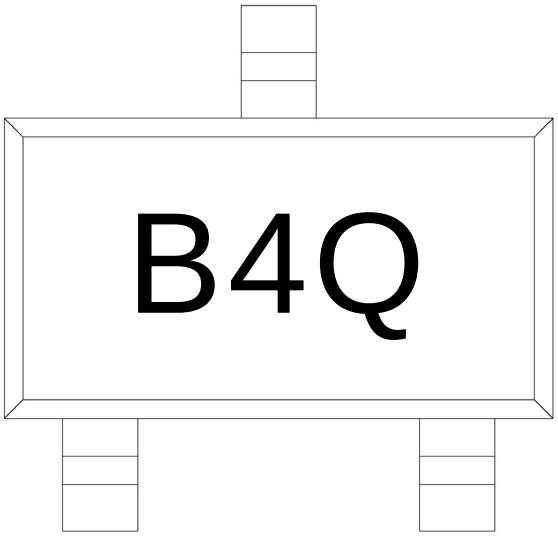
Figure 10: Normalized Maximum Transient Thermal Imped

/ Package Dimensions



/ Marking Instructions



B4

Q

Note:

B4:	Product Type Code
Q:	Automobile halogen-free product Code

( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)

Note:

1	150	200		60	120sec;	1.Preheating:150~200	, Time:60~120sec.
2	255±5				5±0.5sec;	2.Peak Temp.:255±5	, Duration:5±0.5sec.
3			2	10	/sec.	3. Cooling Speed: 2~10	/sec.

/ Resistance to Soldering Heat Test Conditions

260±5	10±1 sec.	Temp.:260±5	Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension		(unit mm³)
SOT23-3	3,000	10	30,000	4	120,000	7″ ×8	210×205×205	445×230×435