

/ Descriptions

SOT23-3 N MOS

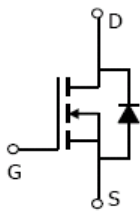
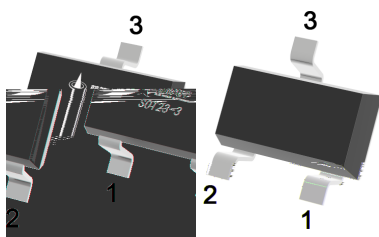
N- CHANNEL MOSFET in a SOT23-3 Plastic Package.

/ Features $V_{DS} (V) = 30V$ $I_D = 5.5 A (V_{GS} = 20V)$ $R_{DS(ON)} < 31m\Omega (V_{GS} = 10V)$ $R_{DS(ON)} < 43m\Omega (V_{GS} = 4.5V)$ AEC-Q101
HF Product.

Qualified to AEC-Q101 Standards for High Reliability,

/ 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
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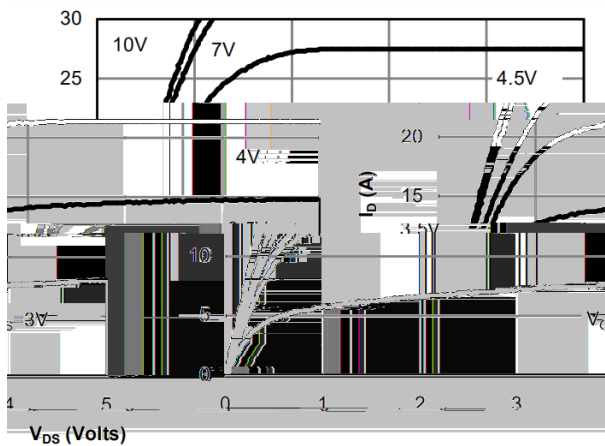
/ Absolute Maximum Ratings(Ta=25)

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	$^{\circ}\text{C}$
Maximum Junction-to-Ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	90	$^{\circ}\text{C/W}$
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}	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24\text{V}$ $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=24\text{V}$ $V_{GS}=0\text{V}$ $T_J=55^{\circ}\text{C}$			5	μA
Gate–Body Leakage.	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	1.0	1.5	2.5	V
Static Drain–Source On–Resistance	$R_{DS(on)(1)}$	$V_{GS}=10\text{V}$ $I_D=5.5\text{A}$		20	31	$\text{m}\Omega$
	$R_{DS(on)(2)}$	$V_{GS}=4.5\text{V}$ $I_D=4\text{A}$		26	43	
Drain–Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}$ $I_S=1\text{A}$		0.77	1	V
Input Capacitance	C_{iss}	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$		380		pF
Output Capacitance	C_{oss}			165		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10\text{V},$ $V_{DS}=15\text{V},$ $I_D=5.5\text{A}$		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	$t_{d(on)}$	$V_{GS}=10\text{V}$ $R_L=3\Omega$ $V_{DS}=15\text{V}$ $R_{GEN}=3\Omega$		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

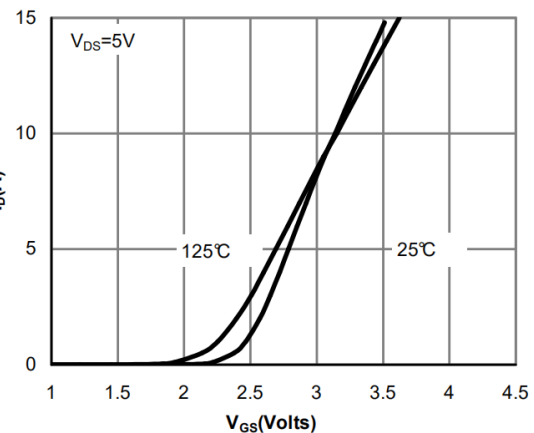
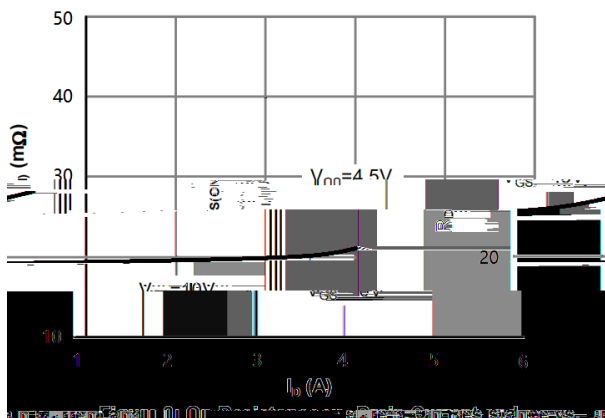


Figure 2: Transfer Characteristics



Gate Voltage

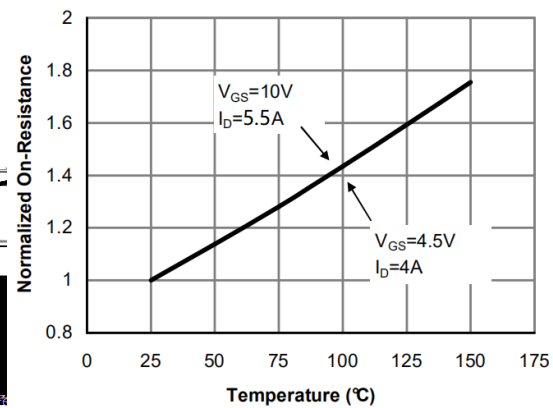


Figure 4: On-Resistance vs. Junction Temperature



Resistance vs. Gate-Source Voltage

Figure 5: On

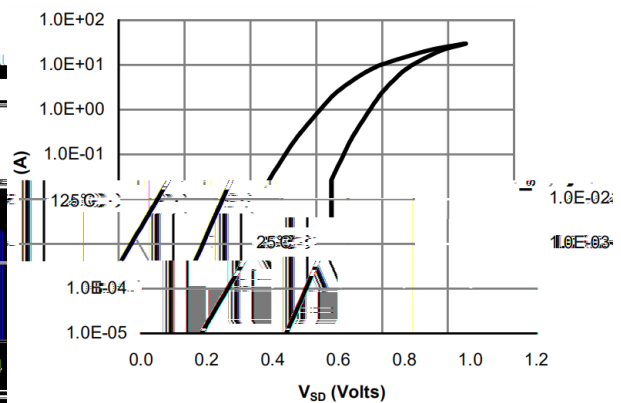


Figure 6: Body Diode Characteristics

/ Electrical Characteristic Curve

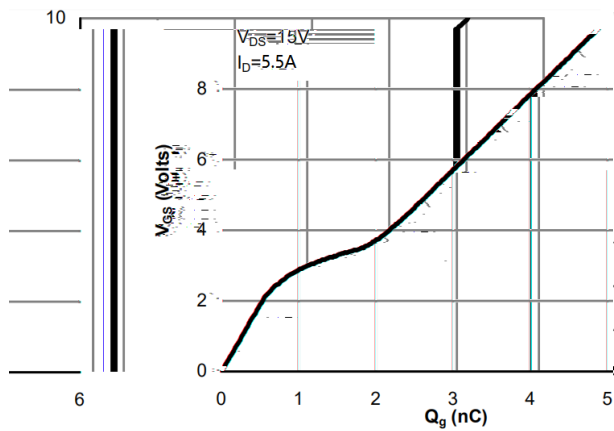


Figure 7: Gate-Charge Characteristics

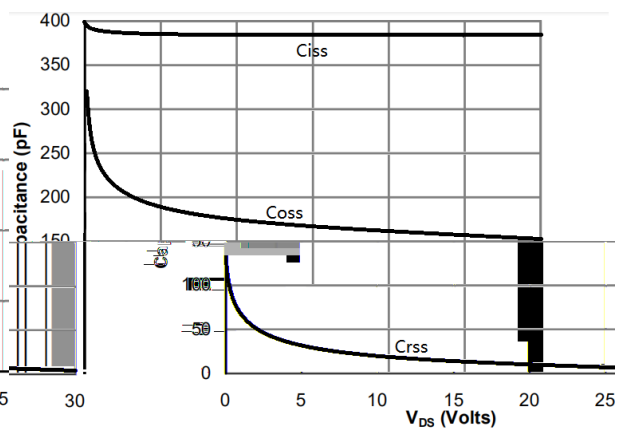


Figure 8: Capacitance Characteristics

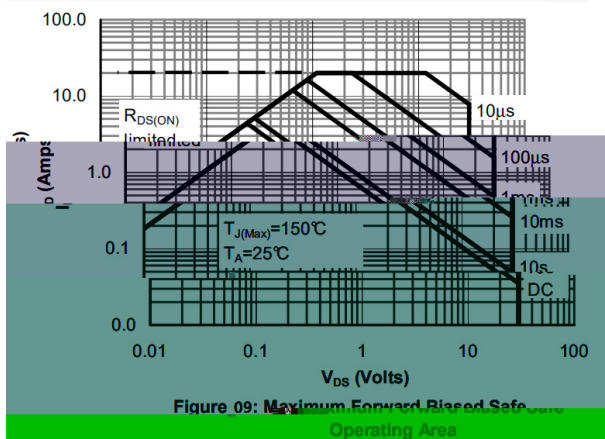


Figure 09: Maximum Forward Biased Safe Operating Area

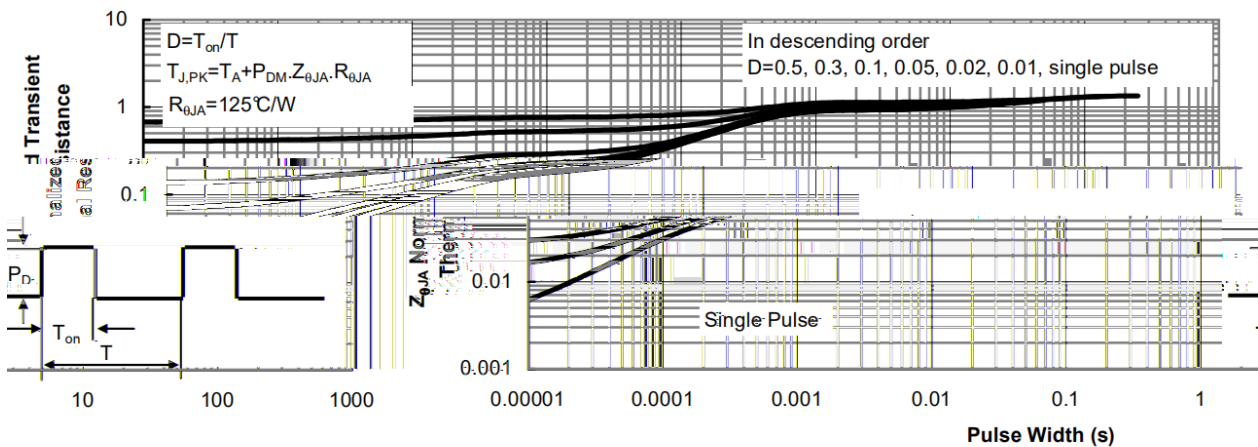
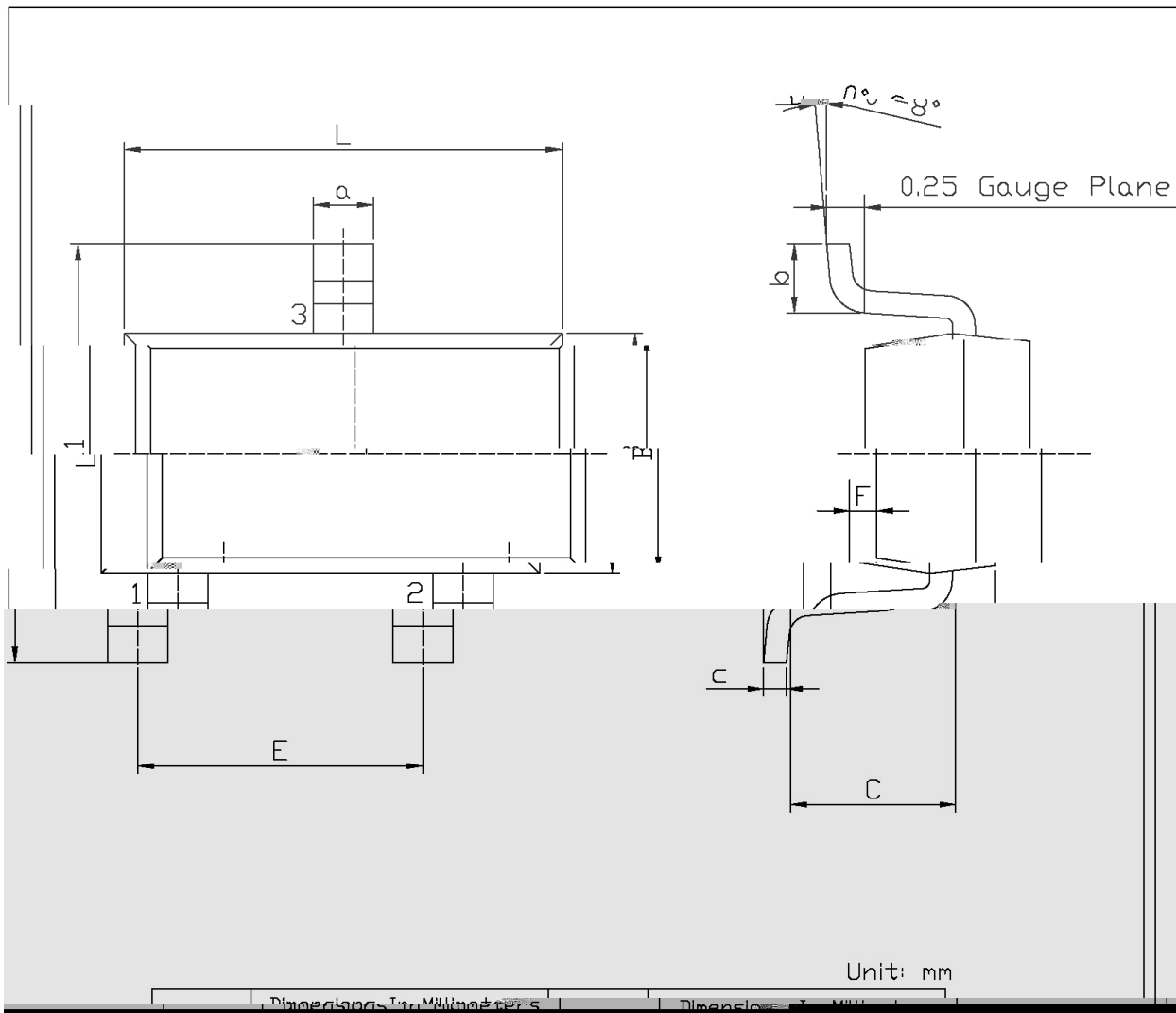


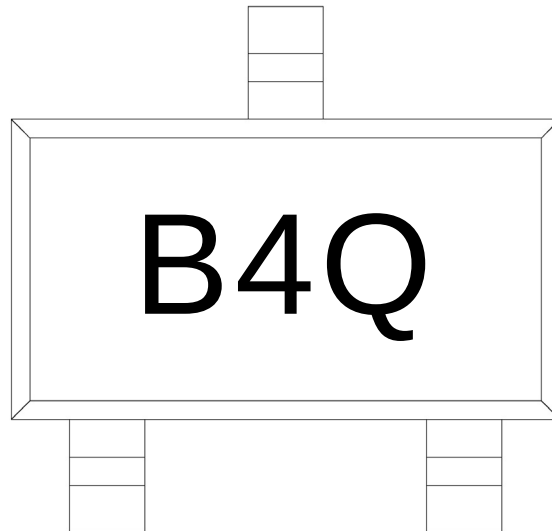
Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions



	Dimensions in Millimeters			Dimensions in Inches		
	2.82	3.02	6	0.25	0.50	

/ 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 mm ³)		
SOT23-3	3,000	10	30,000	4	120,000	7" ×8	210×205×205	445×230×435