

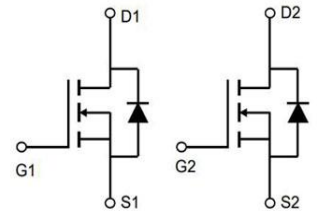
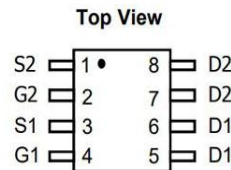
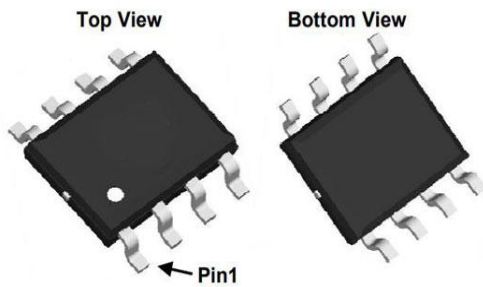
General Description

40V /6A Power MOSFET

Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=4.5V$

Pb-free lead plating; RoHS compliant

V_{DS}	40	V
$R_{DS(on),TYP@V_{GS}=10V}$	26.6	mΩ
$R_{DS(on),TYP@V_{GS}=4.5}$	41.8	mΩ
I_D	6	A



Part ID	Package Type	Marking	Tape and reel information
AC6B04C	SOP8	6B04	3000



100% UIS Tested
100% Rg Tested

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	20	±V
Continuous Drain Current A	I_D	6.0	A
		5.0	
Pulsed Drain Current B	I_{DM}	9.6	
Avalanche Current C	I_{AR}	1.9	
Repetitive avalanche energy L=0.1mH G	E_{AR}	4.4	mJ
Power Dissipation A	P_D	2	W
		1.3	
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient A	R_{JA}	95	142	°C/W
Maximum Junction-to-Ambient A		190	228	°C/W
Maximum Junction-to-Lead c	R_{JL}	57	91	°C/W

STATIC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	I _D = -250 μ A, V _{GS} = 0V	40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V			1	μ A
					5	
I _{GSS}	Gate-Body leakage current	V _{DS} = 0V, V _{GS} = $\pm$ 20V			$\pm$ 100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} I _D = 250 μ A	1.5	2.3	3	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =6A		26.6	38.0	m Ω
		V _{GS} =4.5V, I _D =6A		41.8	54.3	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =6A		89		S
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =24V		0.72	1	V
I _S	Maximum Body-Diode Continuous Current				6	A

DYNAMIC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		516	629	pF
C _{oss}	Output Capacitance			82	100	pF
C _{rss}	Reverse Transfer Capacitance			43	51	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz			0.7	Ω

SWITCHING PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =6A		4.3		nC
Q _g 4.5V)	Total Gate Charge			2.15		
Q _{gs}	Gate Source Charge			0.98		
Q _{gd}	Gate Drain Charge			1.4		
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =15V, R _L =0.75 Ω , R _{GEN} =3 Ω		9		ns
t _r	Turn-On Rise Time			7.2		
t _{D(off)}	Turn-Off DelayTime			25.2		
t _f	Turn-Off Fall Time			8.1		
t _{rr}	Body Diode Reverse Recovery Time	I _F =-8A, dI/dt=500A/ μ s		18		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =18A, dI/dt=500A/ μ s		10		nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

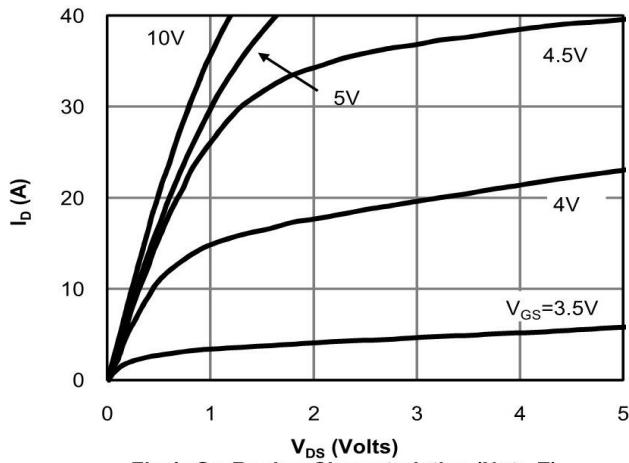


Fig 1: On-Region Characteristics (Note E)

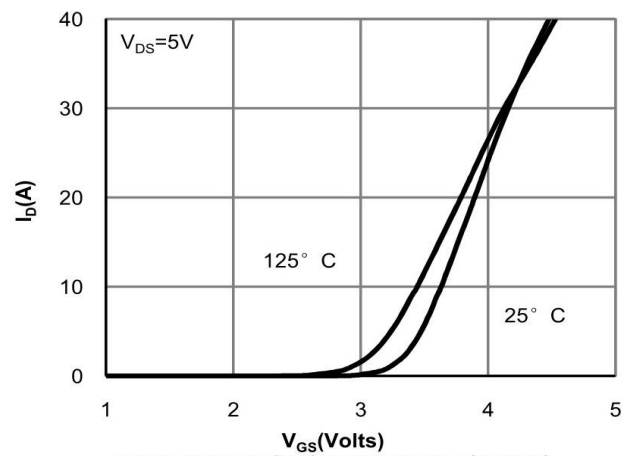


Figure 2: Transfer Characteristics (Note E)

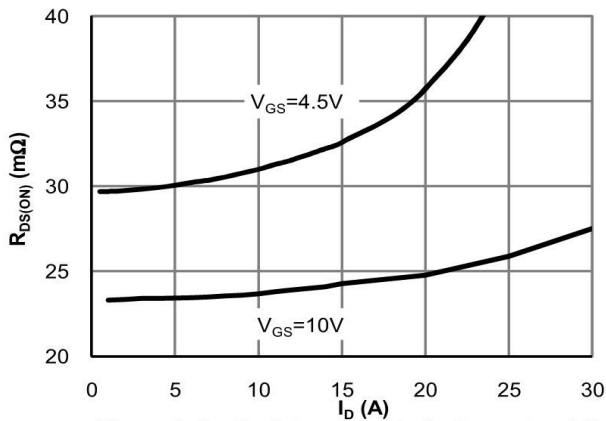


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

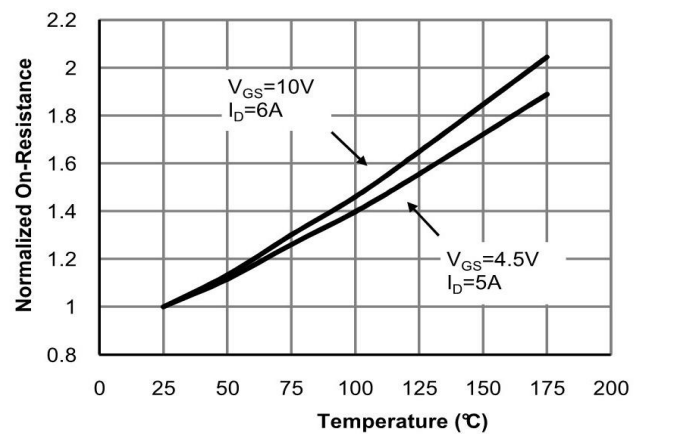


Figure 4: On-Resistance vs. Junction Temperature (Note E)

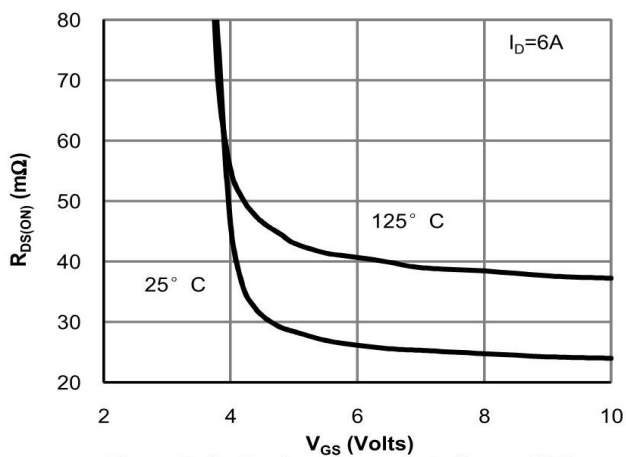


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

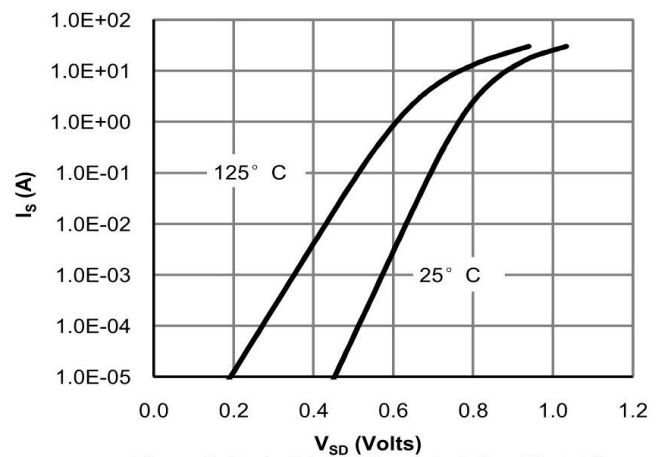
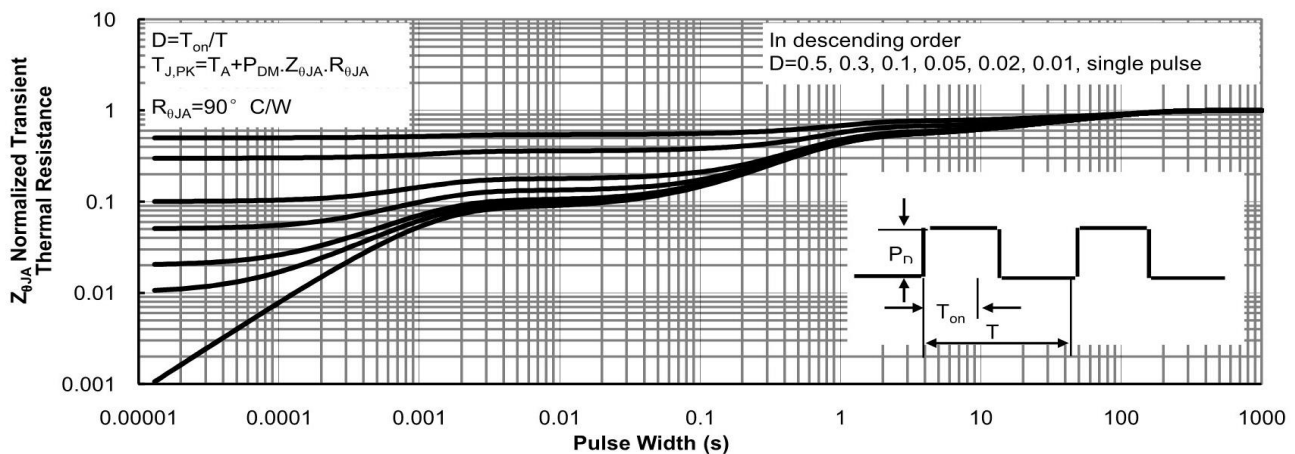
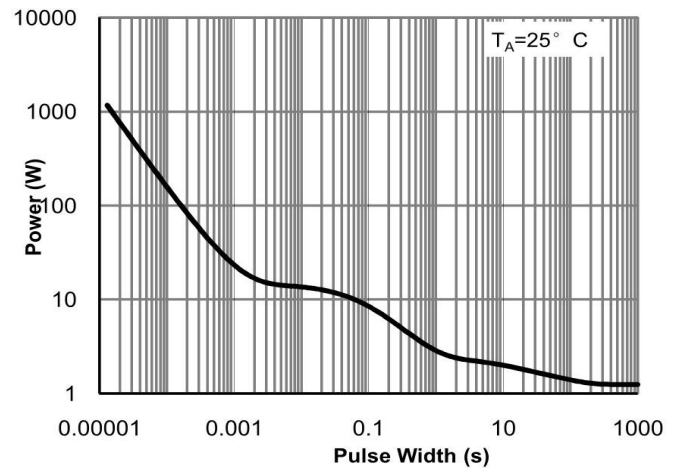
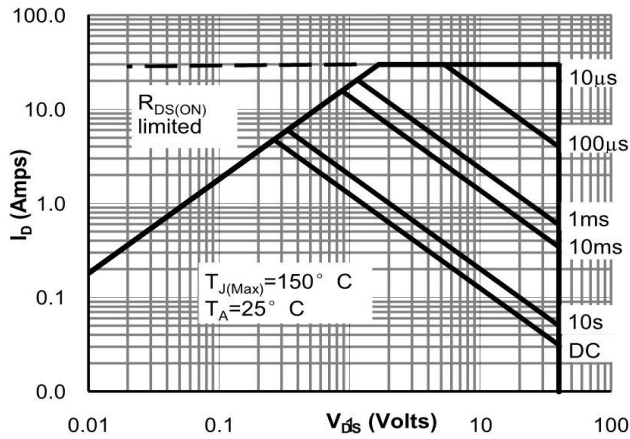
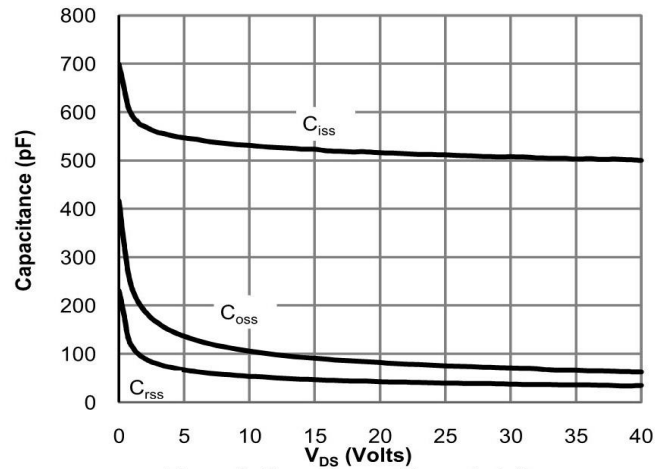
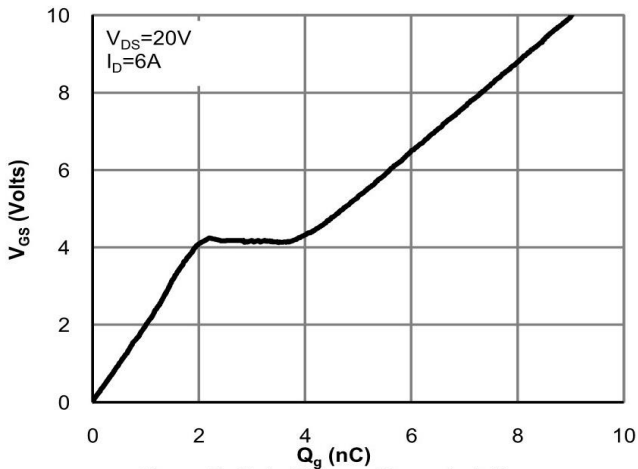
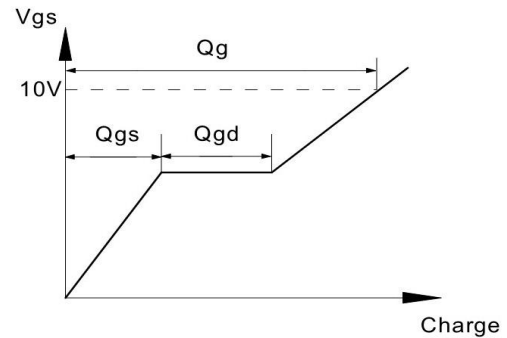
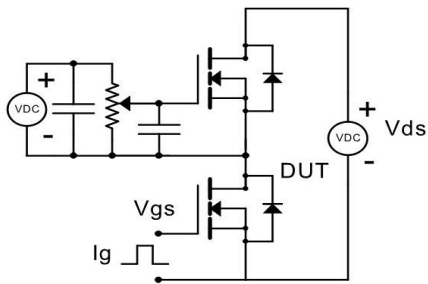


Figure 6: Body-Diode Characteristics (Note E)

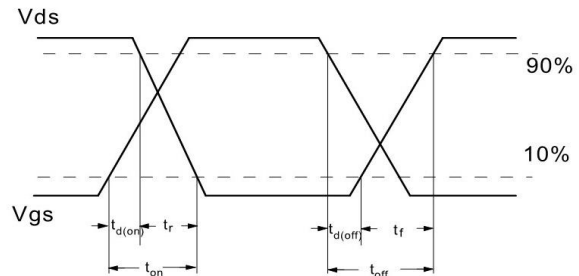
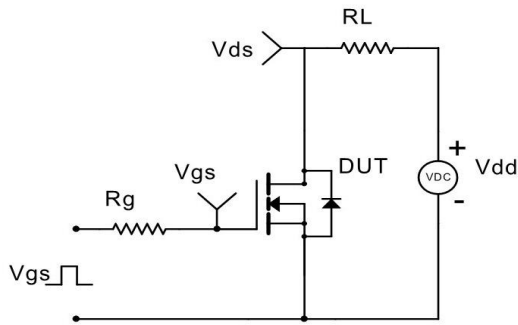
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



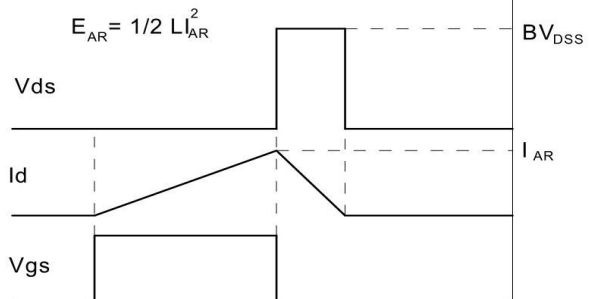
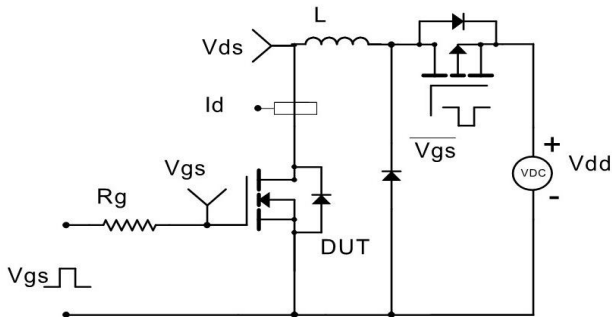
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

