

BRCS4354SC

Rev.C Aug.-2023



DATA SHEET

SOP-8 N MOS

N-Channel MOSFET in a SOP-8 Plastic Package.

$V_{DS}=30V$ $I_D=23A(V_{GS}=\pm 20V)$

$R_{DS(ON)}@10V \leq 5.5m\Omega$ (Typ. 4.3m Ω)

$R_{DS(ON)}@4.5V \leq 7.0m\Omega$ (Typ. 5.5m Ω)

HF Product.

/ Absolute Maximum Ratings($T_a=25^\circ\text{C}$)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	23	A
Pulsed Drain Current ^①		I_{DM}	120	A
Avalanche Current		I_{AS}	30	A
Avalanche energy		E_{AS}	70	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	5	W
Operating and Junction Temperature Range		T_j T_{stg}	$-55\sim+150$	
Thermal resistance, junction - ambient		$R_{\theta JA}$	75	/ W
Thermal resistance, junction - case		$R_{\theta JC}$	25	/ W

/ Electrical Characteristics($T_a=25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$			1.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.2	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=20A$		4.3	5.5	m Ω
		$V_{GS}=4.5V$ $I_D=12A$		5.5	7	
Forward Transconductance	g_{FS}	$V_{DS}=25V$ $I_D=10A$		30		S
Diode Forward Voltage	V_{SD}	$I_S=1A$ $V_{GS}=0V$		0.7	1.2	V

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1.0MHz		4000		pF
Output Capacitance	C _{oss}			420		
Reverse Transfer Capacitance	C _{rss}			280		
Gate resistance	R _g	f=1.0MHz		0.55		Ω
Total Gate Charge(10V)	Q _{g(10V)}	V _{GS} =10V I _D =20A V _{DS} =15V		36	49	nC
Total Gate Charge(4.5V)	Q _{g(4.5V)}			17	23	
Gate-Source Charge	Q _{gs}			6		
Gate-Drain Charge	Q _{gd}			8		
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V V _{DS} =15V R _L =0.75Ω R _{GEN} =3.0Ω		7.5		ns
Turn-On Rise Time	t _r			4.0		
Turn-Off Delay Time	t _{d(off)}			37.0		
Turn-Off Fall Time	t _f			7.5		
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A di/dt=500A/μs		14		ns
Body Diode Reverse Recovery Charge	Q _{rr}			20.3		nC

Note: ① Pulse Test : Pulse width ≤ 300 μs, Duty cycle ≤ 2% ;

/ Electrical Characteristic Curve

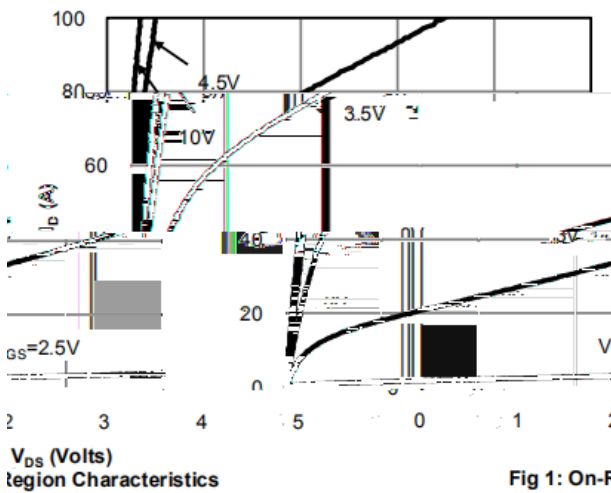


Figure 1: On-Region Characteristics

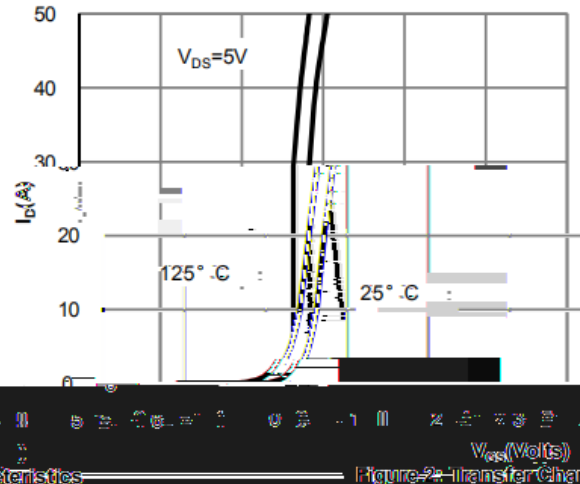


Figure 2: Transfer Characteristics

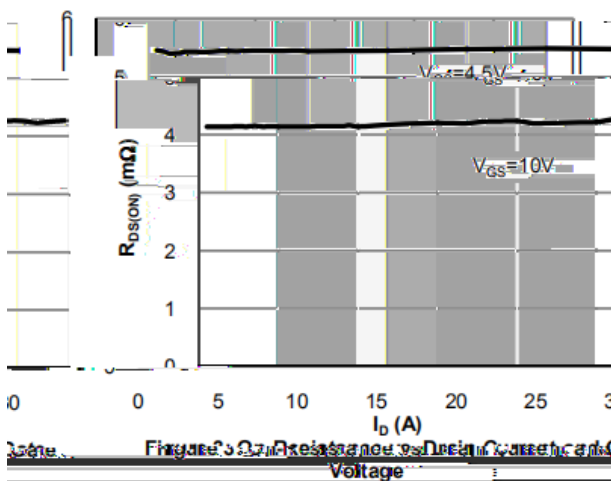


Figure 3: On-Resistance vs. Drain Current and Voltage

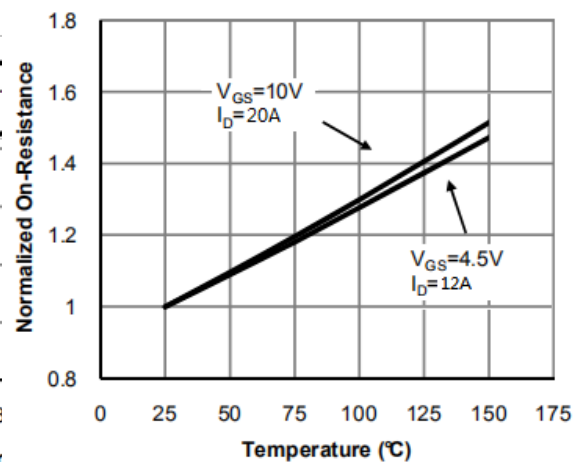


Figure 4: On-Resistance vs. Junction Temperature

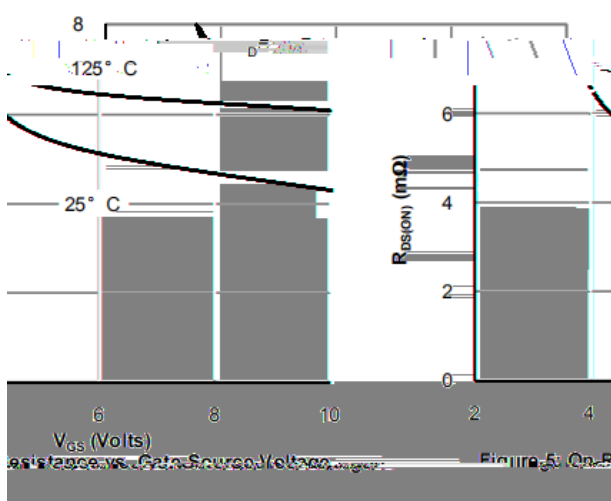


Figure 5: On-Resistance vs. Gate-Source Voltage

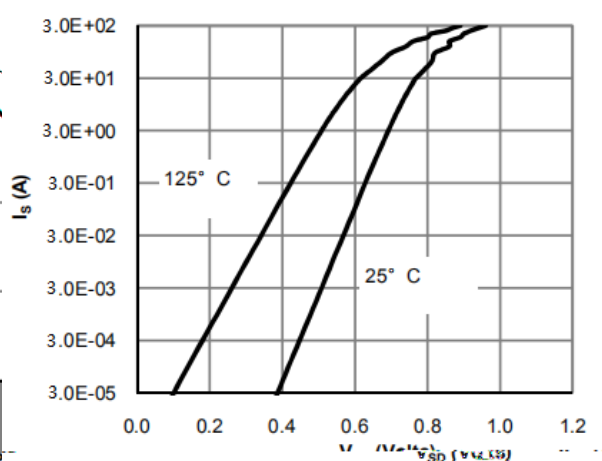


Figure 6: Body Diode Characteristics

/ Electrical Characteristic Curve

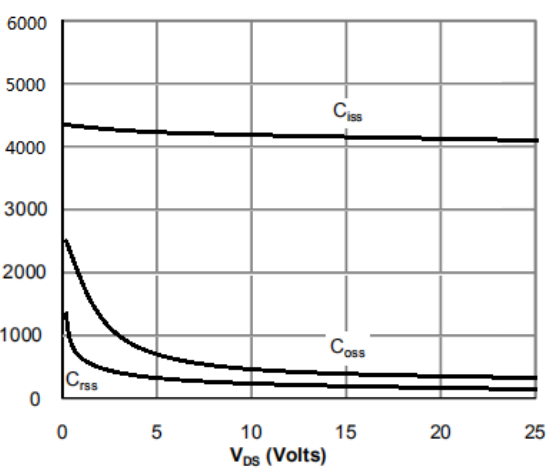
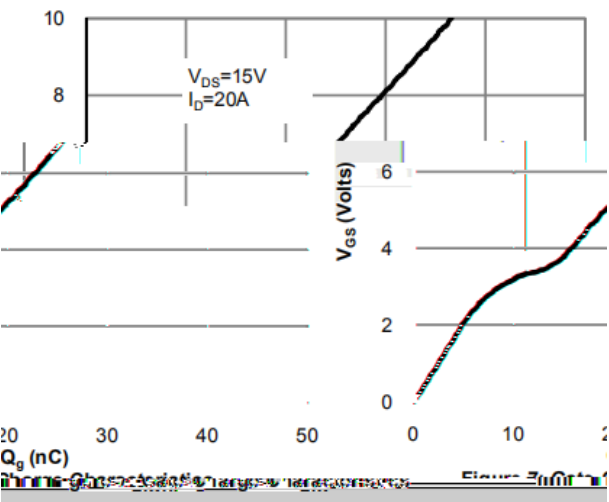


Figure 8: Capacitance Characteristics

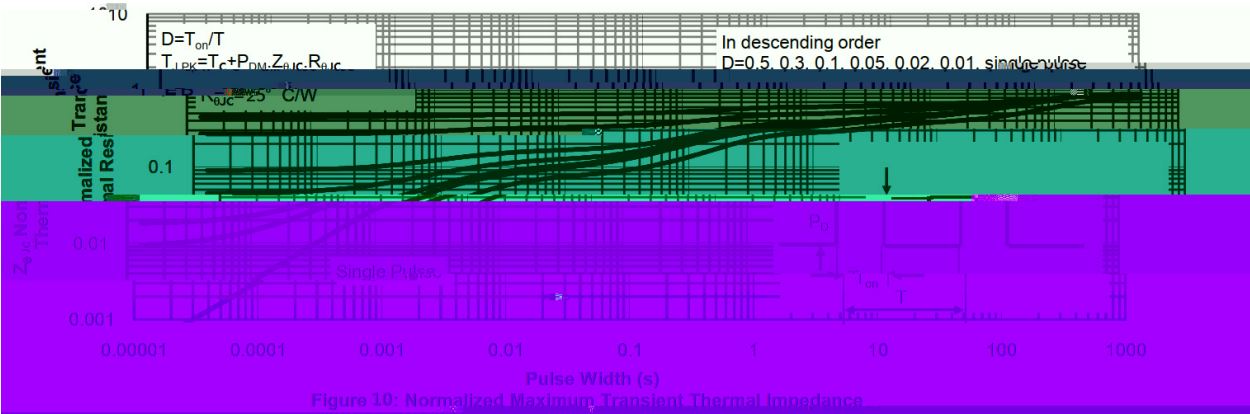
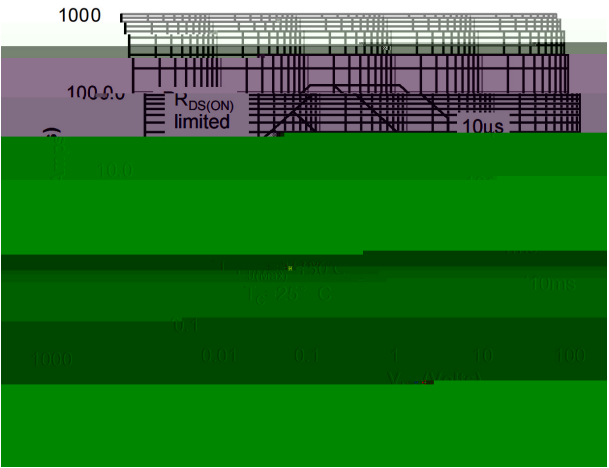
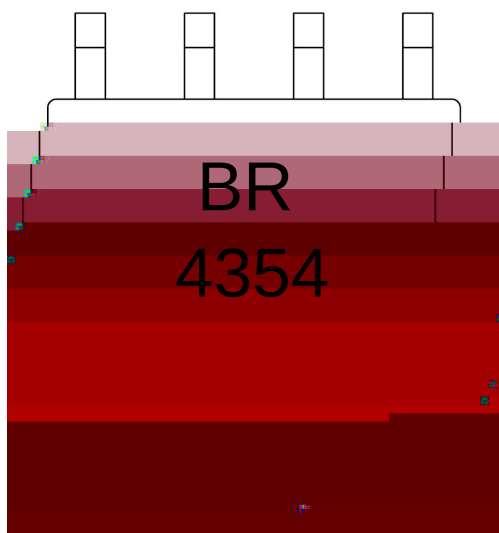


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Marking Instructions



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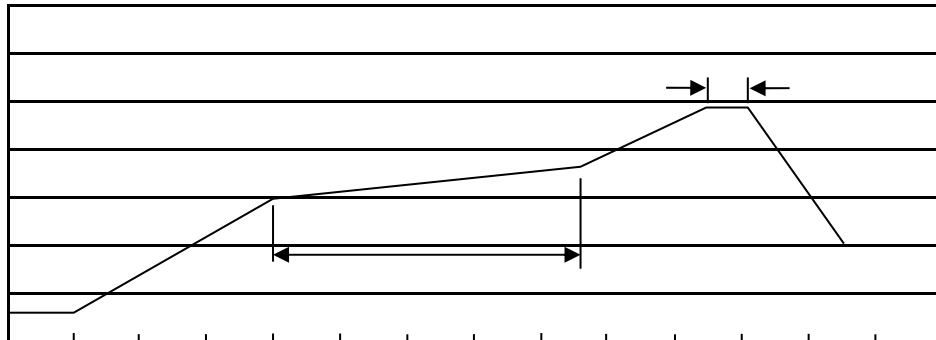
Note:

BR: Company Code.

4354 Product Type.

****: Lot No. Code, code change with Lot No.

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



Note:

- 1 150 180 60 90sec;
 2 245±5 5±0.5sec;
 3 2 10 /sec.

- 1.Preheating:150~180 , Time:60~90sec.
 2.Peak Temp.:245±5 , Duration:5±0.5sec.
 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)		
SOP/ESOP-8	4,000	2	8,000	6	48,000	13" ×12	360×360×50	380×335×366

/ Notices