

/ Descriptions

SOP-8

MOS

Complementary Enhancement MOSFET in a SOP-8 Plastic Package.

/ Features

N-channel

P-channel

 $V_{DS}(V)=40V$ $V_{DS}(V)=-40V$ $I_D=8A(T_C=25^\circ C)$ $I_D=-7A(T_C=25^\circ C)$ $R_{DS(ON)}<25m\Omega(V_{GS}=10V)$ $R_{DS(ON)}<35m\Omega(V_{GS}=-10V)$ $R_{DS(ON)}<45m\Omega(V_{GS}=4.5V)$ $R_{DS(ON)}<60m\Omega(V_{GS}=-4.5V)$

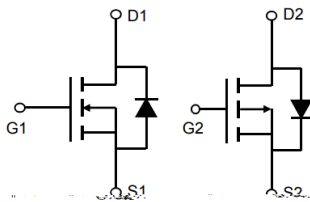
HF Product.

/ Applications

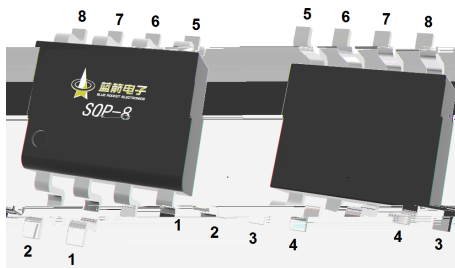
DC/DC

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies. And suitable for use as a load switch or in PWM applications.

/ Equivalent Circuit



/ Pinning



PIN1	S1	PIN 2	G1	PIN 3	S2	PIN 4	G2
PIN 5	D2	PIN 6	D2	PIN 7	D1	PIN 8	D1

/ Marking

See Marking Instructions.

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

Parameter	Symbol	Rating		Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DSS}	40	-40	V
Gate-Source Voltage	V_{GSS}	± 20		V
Continuous Drain Current	$I_D (T_C=25^\circ\text{C})$	8	-7	A
Continuous Drain Current	$I_D (T_A=25^\circ\text{C})$	6	-5	A
Pulsed Drain Current	I_{DM}	20	-20	A
Power Dissipation	$P_D (T_C=25^\circ\text{C})$	3.5	3.5	W
Power Dissipation	$P_D (T_A=25^\circ\text{C})$	2	2	W
Maximum Junction-to-Ambient	$R_{\theta JA}$	$t \leq 10\text{s}$	62.5	/W
	$R_{\theta JA}$	Steady-State	110	/W
Maximum Junction-to-Case	$R_{\theta JC}$	Steady-State	35.7	/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		

N- /N-CHANNEL Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	40	44		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=40V$ $V_{GS}=0V$ $T_J=55$			5.0	μA
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.4	1.6	3.0	V
On state drain current	$I_{D(on)}$	$V_{DS}=10V$ $V_{GS}=5.0V$	20			A
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=6A$		17.5	25	m Ω
		$V_{GS}=4.5V$ $I_D=5.0A$		22.8	45	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5.0V$ $I_D=6.0A$		14		S
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1.0A$		0.73	1.0	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		1200		pF
Output Capacitance	C_{oss}			310		pF
Reverse Transfer Capacitance	C_{rss}			65		pF
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		9.5		Ω
Total Gate Charge(10V)	Q_g	$V_{GS}=10V$ $V_{DS}=20V$ $I_D=6A$		8.3		nC
Total Gate Charge(4.5V)				4.2		nC
Gate-Source Charge	Q_{gs}			1.3		nC
Gate-Drain Charge	Q_{gd}			2.3		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=20V$ $V_{GS}=10V$ $R_L=3.3\Omega$ $R_{GEN}=3\Omega$		4.2		ns
Turn-On Rise Time	t_r			3.3		ns
Turn-Off Delay Time	$t_{d(off)}$			15.6		ns
Turn-Off Fall Time	t_f			3		ns

N- / N-CHANNEL Electrical Characteristic Curve

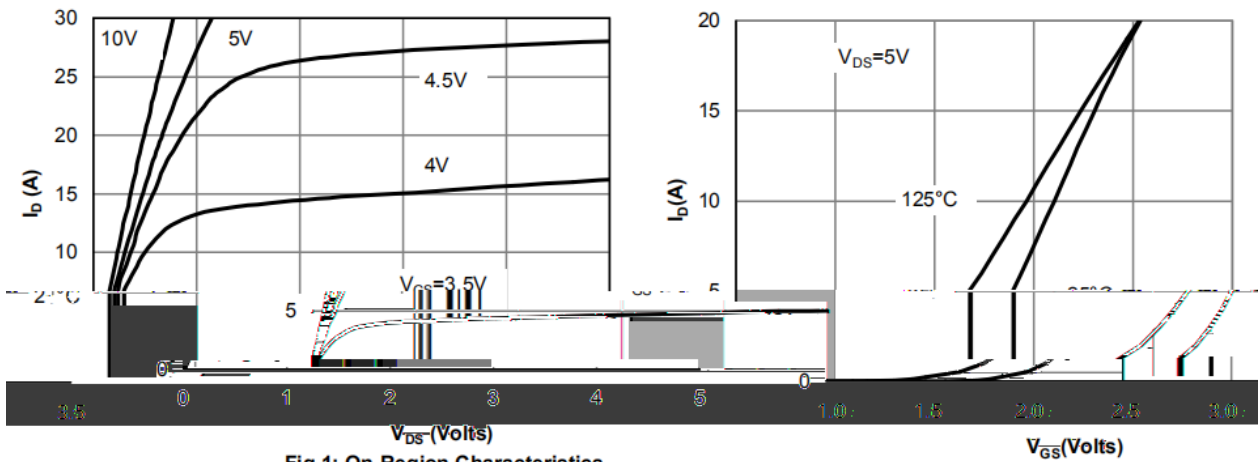


Fig 1: On-Region Characteristics

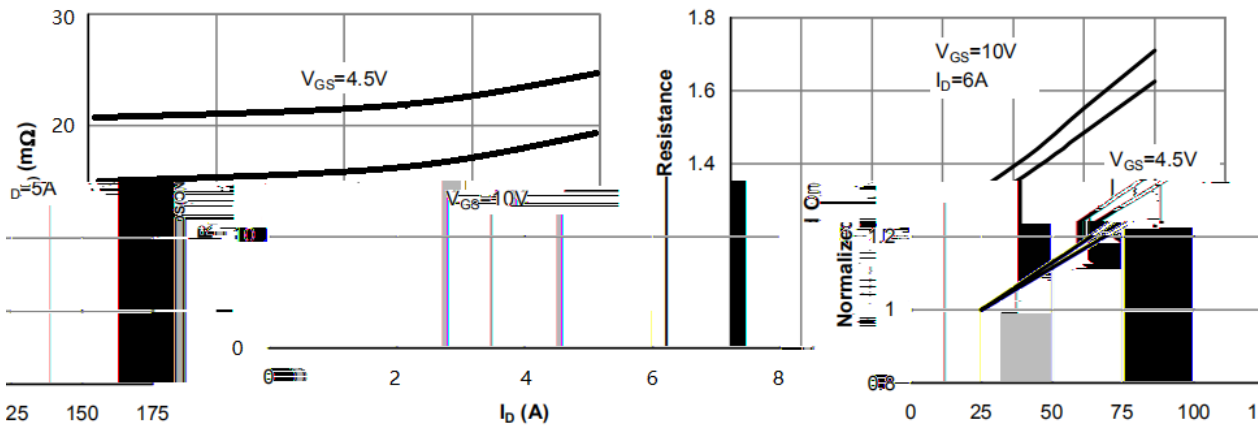


Figure 2: On-Resistance vs. Drain Current

Figure 4: On-Resistance vs. Junction Temperature

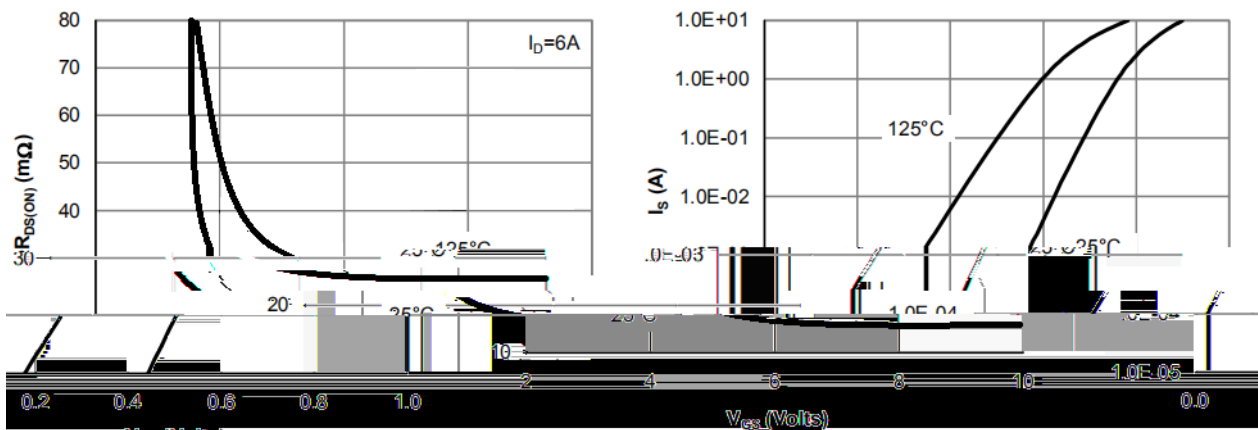
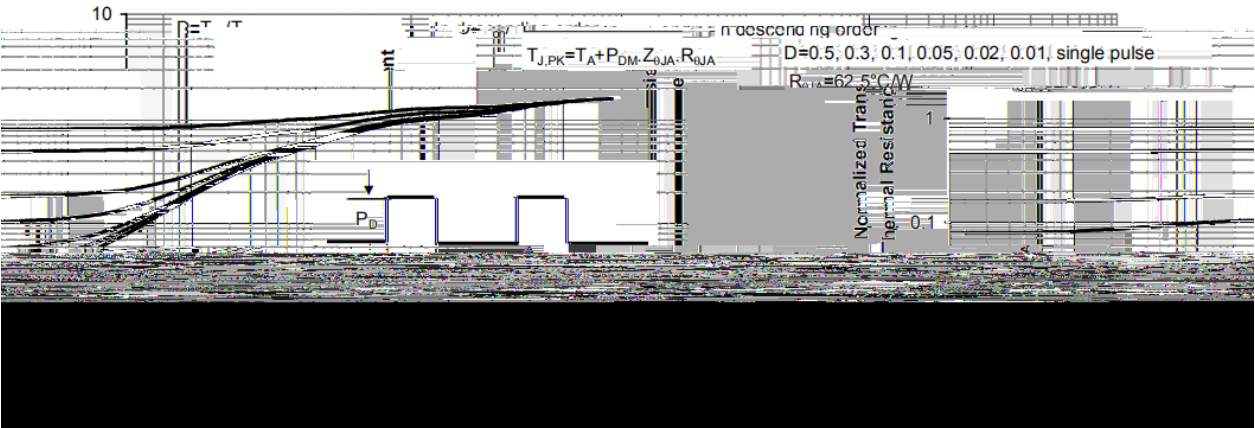
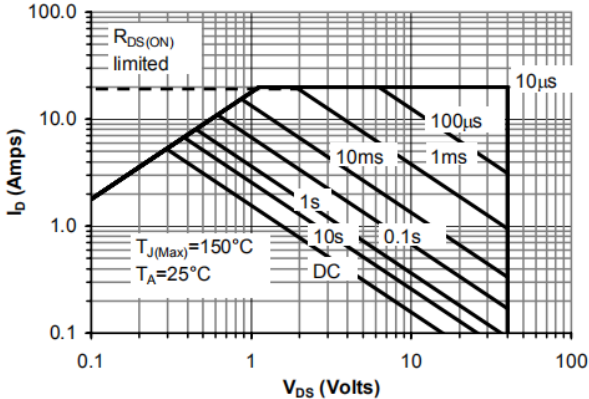
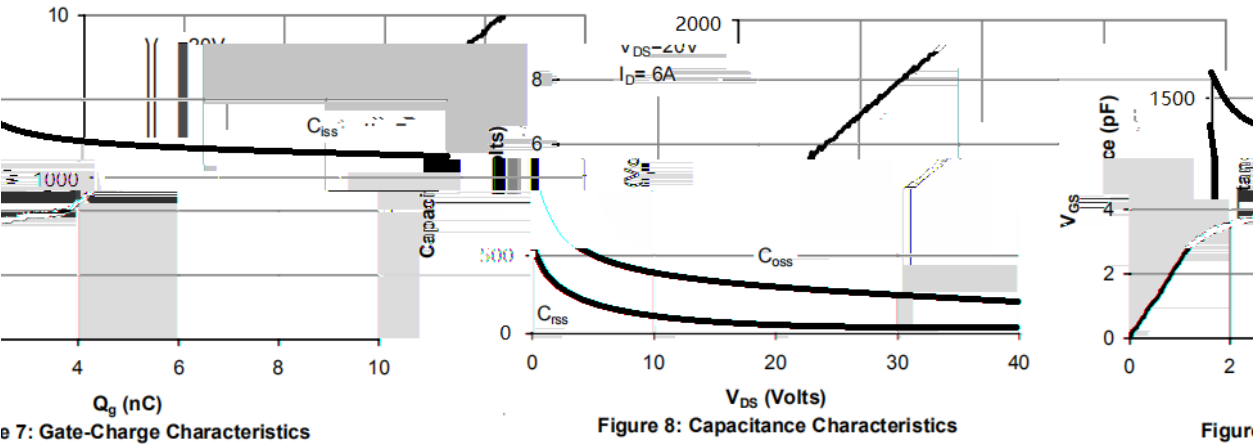


Figure 3: Body Diode Characteristics

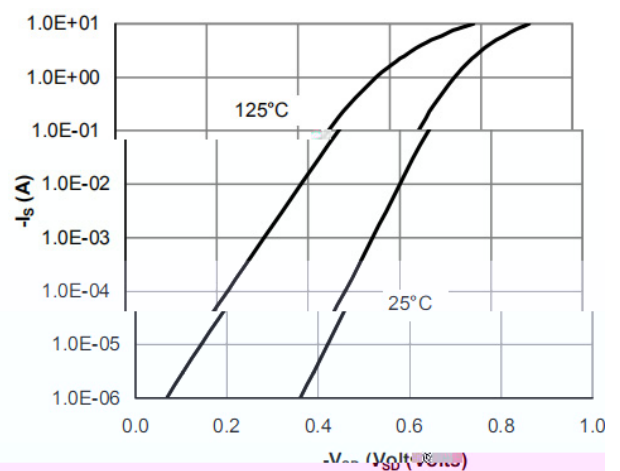
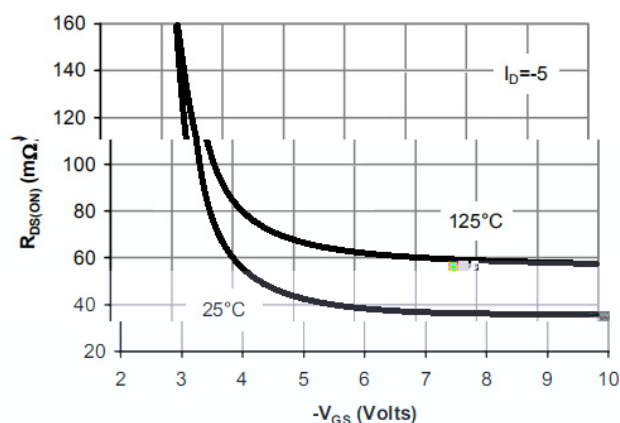
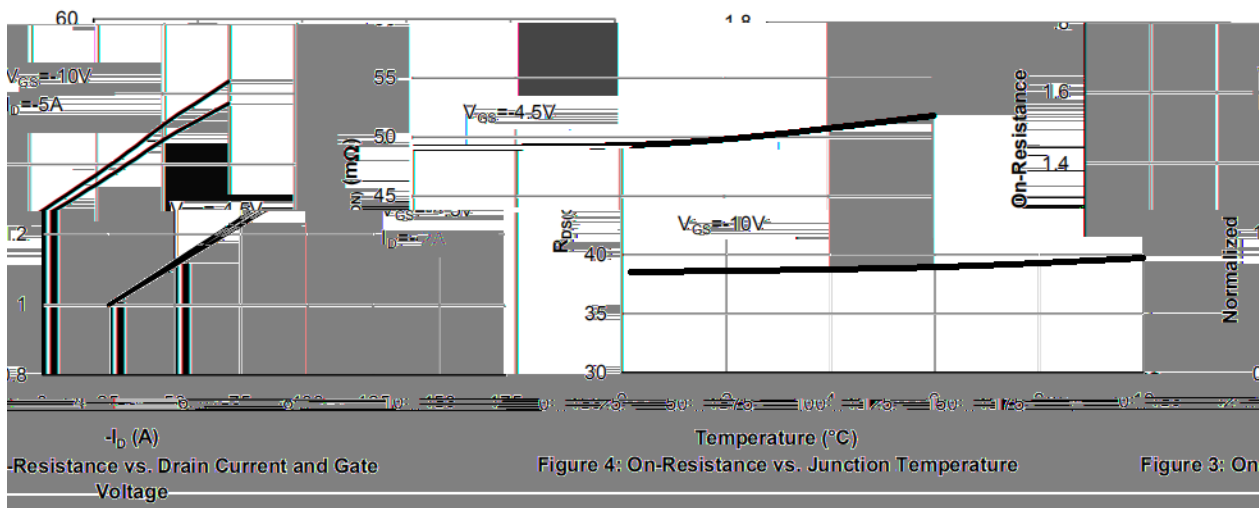
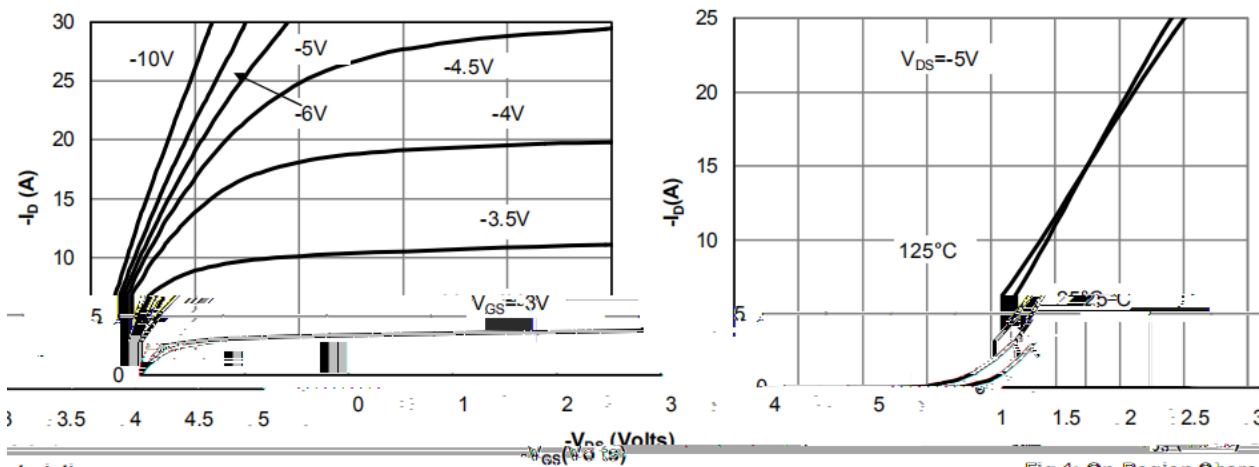
Figure 4: On-Resistance vs. Gate-Source Voltage

N- / N-CHANNEL Electrical Characteristic Curve



Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-40	-46		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V V _{GS} =0V			-1.0	μA
		V _{DS} =-40V V _{GS} =0V T _J =55			-5.0	μA
Gate-Body leakage current	I _{GSS}	V _{GS} =±20V V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250μA	-1.4	-1.6	-3.0	V
On state drain current	I _{D(on)}	V _{DS} =-5V V _{GS} =-10V	6			A
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V I _D =-5.0A		32	35	mΩ
		V _{GS} =-4.5V I _D =-2.0A		49	60	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5.0V I _D =-4.8A		13		S
Diode Forward Voltage	V _{SD}	V _{GS} =0V I _S =-1.0A		-0.76	-1.0	V
Input Capacitance	C _{iss}	V _{DS} =-25V V _{GS} =0V f=1.0MHz		710		pF
Output Capacitance	C _{oss}			61		pF
Reverse Transfer Capacitance	C _{rss}			14		pF
Gate resistance		V _{GS} =0V V _{DS} =0V				
Total Gate Charge(10V)	Q _g	V _{GS} =-10V V _{DS} =-20V I _D =-5.0A		13.6		nC DS

P- / P-CHANNEL Electrical Characteristic Curve



P- / P-CHANNEL Electrical Characteristic Curve

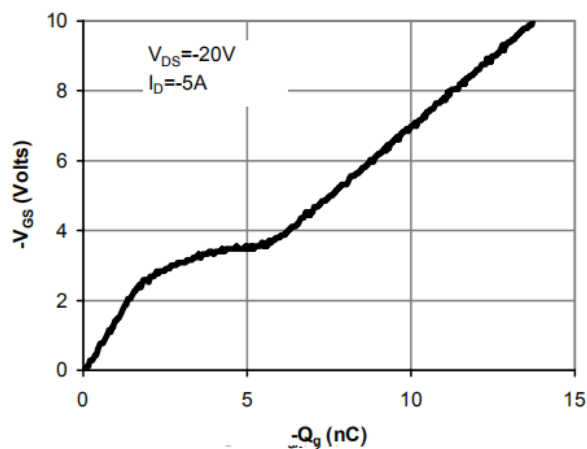


Figure 7: Gate-Charge Characteristics

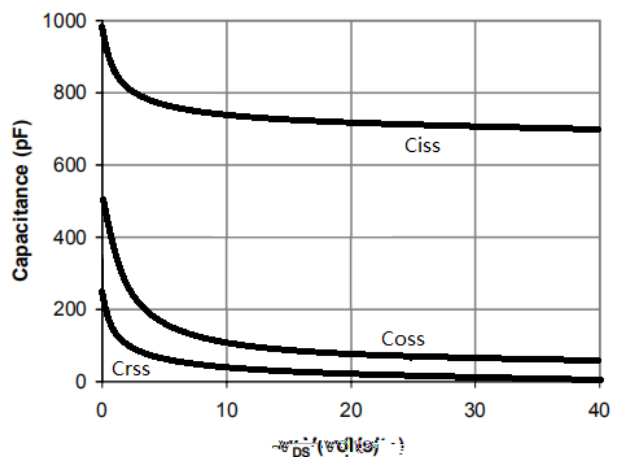


Figure 8: Capacitance Characteristics

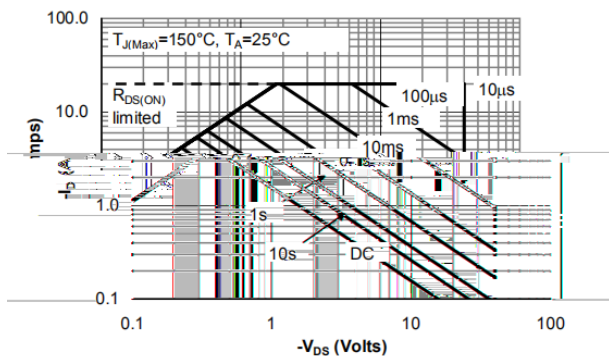


Figure 9 : Maximum Forward Biased Safe Operating Area

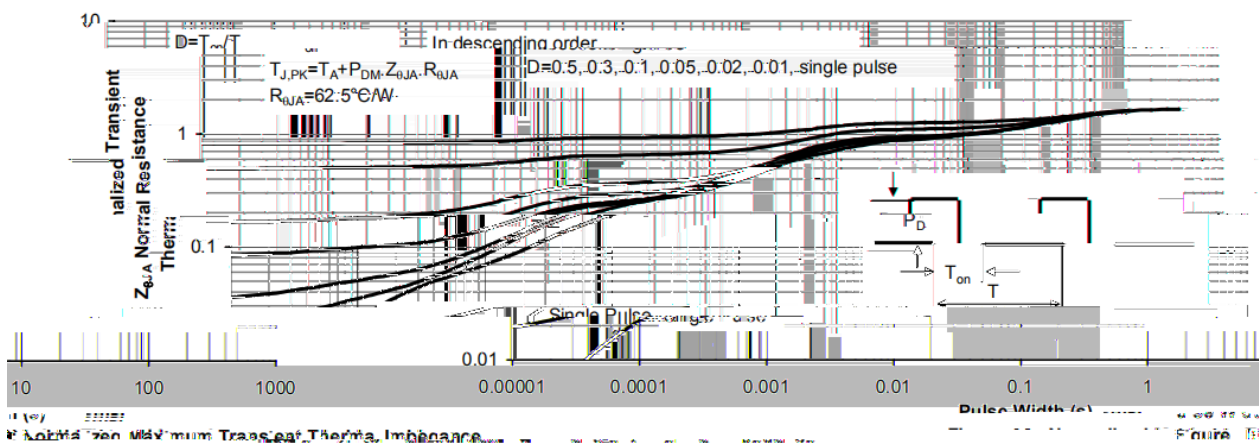
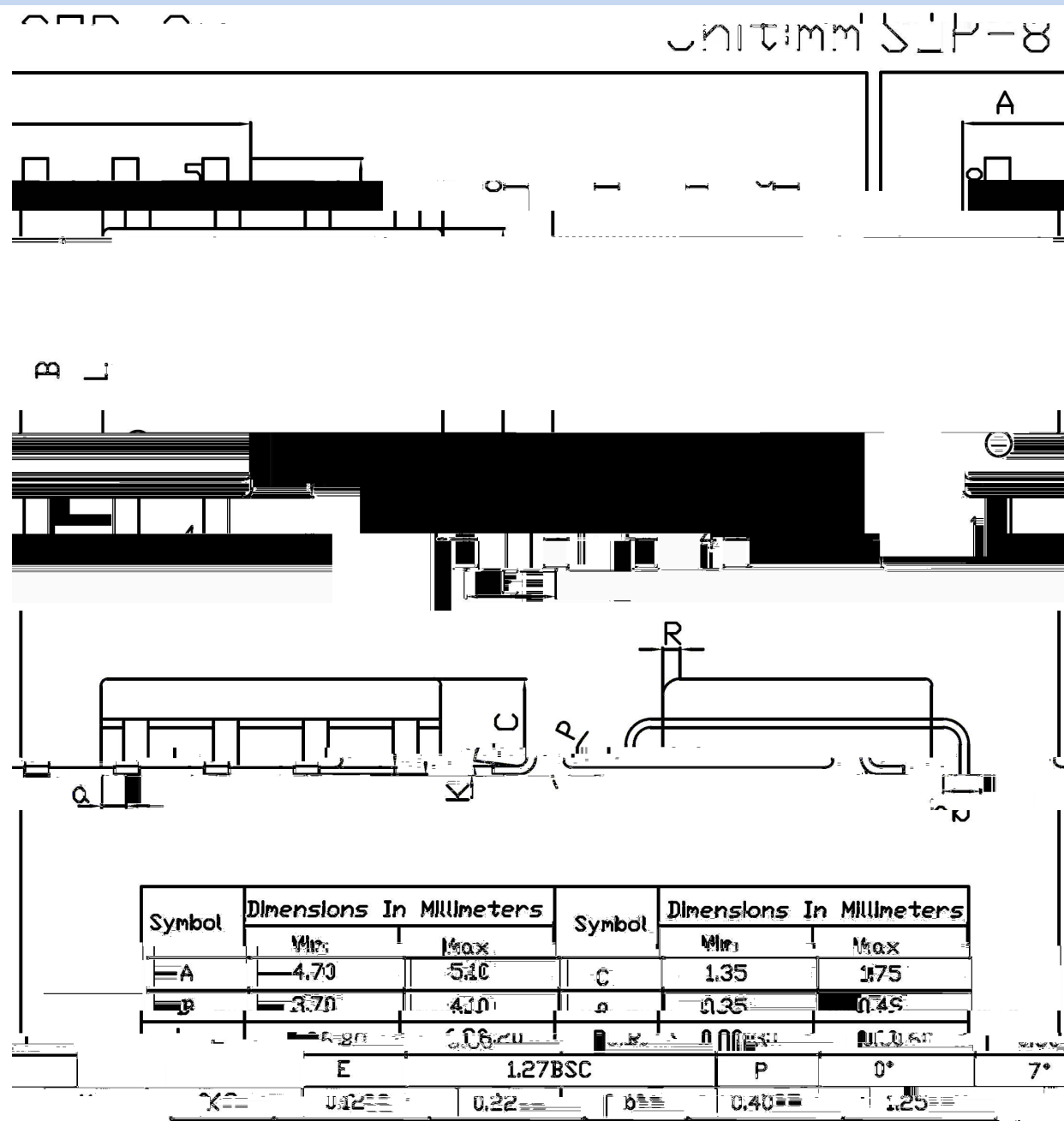


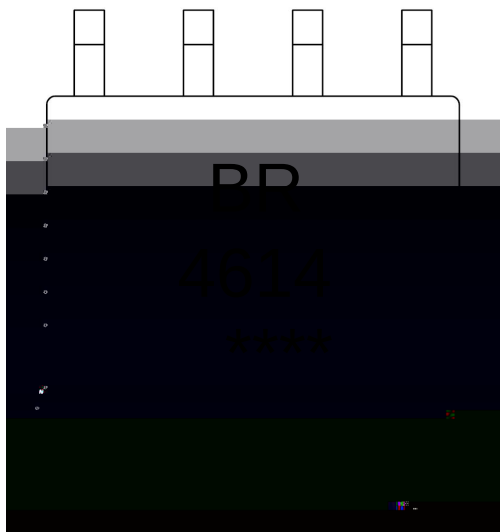
Figure 10: Normalized Transient Thermal Impedance

/ Package Dimensions





/ Marking Instructions



BR

4614

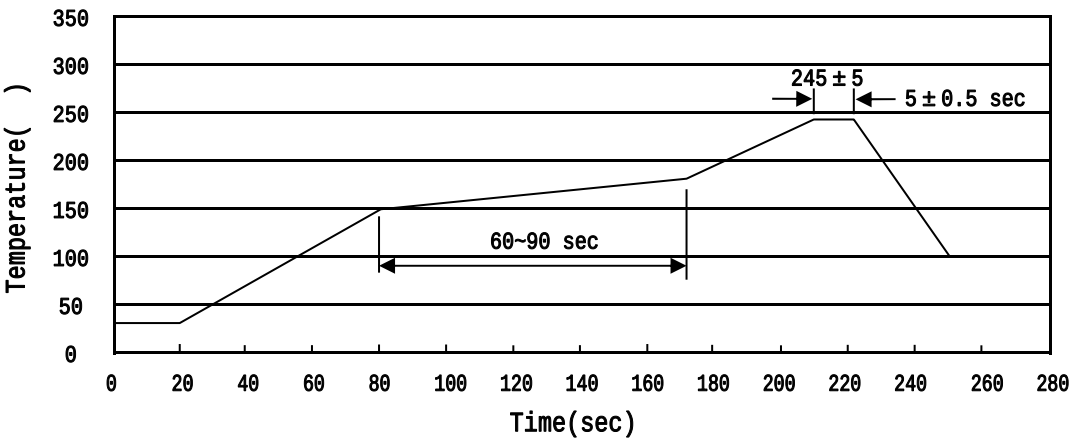
Note:

BR: Company Code

4614: Product Type Code

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

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



Note:

- 1

150 180

60 90sec;

1.Preheating:150~180 , Time:60~90sec.
- 2

245±5

5±0.5sec;

2.Peak Temp.:245±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)		
SOP/ESOP-8	4,000	2	8,000	6	48,000	13 ×12	360×360×50	380×335×366

/ Notices