

/ Descriptions

VRS0; Q MOS N-Channel MOSFET in a SOP-8 Plastic Package.

/ Features
 U_{GV} RQ

UrKV

DHF0T434

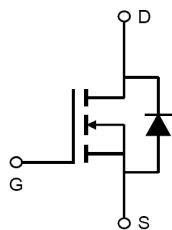
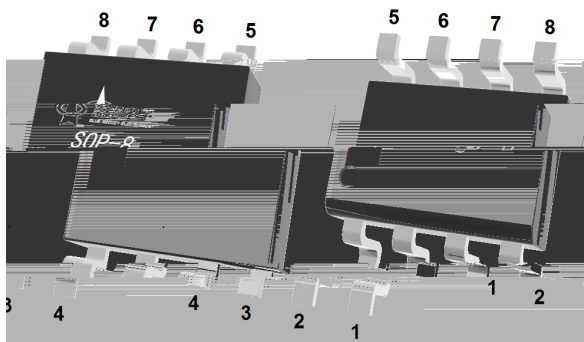
Low $R_{DS(ON)}$, Low Gate Charge, Optimized for fast-switching, RoHS, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

/ Applications

GF2GF DF2GF

2

Synchronous Rectification in DC/DC and AC/DC Converters, Isolated DC/DC Converters in Telecom and Industrial, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit**/ Pinning**

PIN1:S PIN 2:S PIN 3 S PIN 4 G

PIN5 PIN 6 PIN 7 PIN 8:D

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V _{DS}	60	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _A =25	I _D	10	A
	T _A =70		8.0	A
Pulsed Drain Current ^C		I _{DM}	40	A
Avalanche Current ^C		I _{AS}	20	A
Avalanche energy L=0.1mH ^C		E _{AS}	20	mJ
VDS Spike	10 μ S	V _{SPIKE}	72	V
Power Dissipation ^B	T _A =25	P _D	3.1	W
	T _A =70		2.0	W
Maximum Junction-to-Ambient ^A t ≤ 10S		R _{JA}	40	/ W
Maximum Junction-to-Ambient ^{AD} Steady-State			75	/ W
Maximum Junction-to Lead Steady-State		R _{JL}	24	/ W
Operating and Junction Temperature Range		T _j T _{stg}	-55 +150	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250 A	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V V _{GS} =0V			1.0	A
		V _{DS} =60V V _{GS} =0V T _J =55			5.0	A
Gate-Body Leakage Current Forward	I _{GSS}	V _{GS} =±20V V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250 A	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V I _D =10A		12	15	m
		V _{GS} =10V I _D =10A T _J =125		20.5	25	
		V _{GS} =4.5V I _D =9.0A		15	19	
Forward Transconductance	g _{FS}	V _{DS} =5.0V I _D =10A		35		S
Diode Forward Voltage	V _{SD}	I _S =10A V _{GS} =0V		0.72	1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				4.0	A

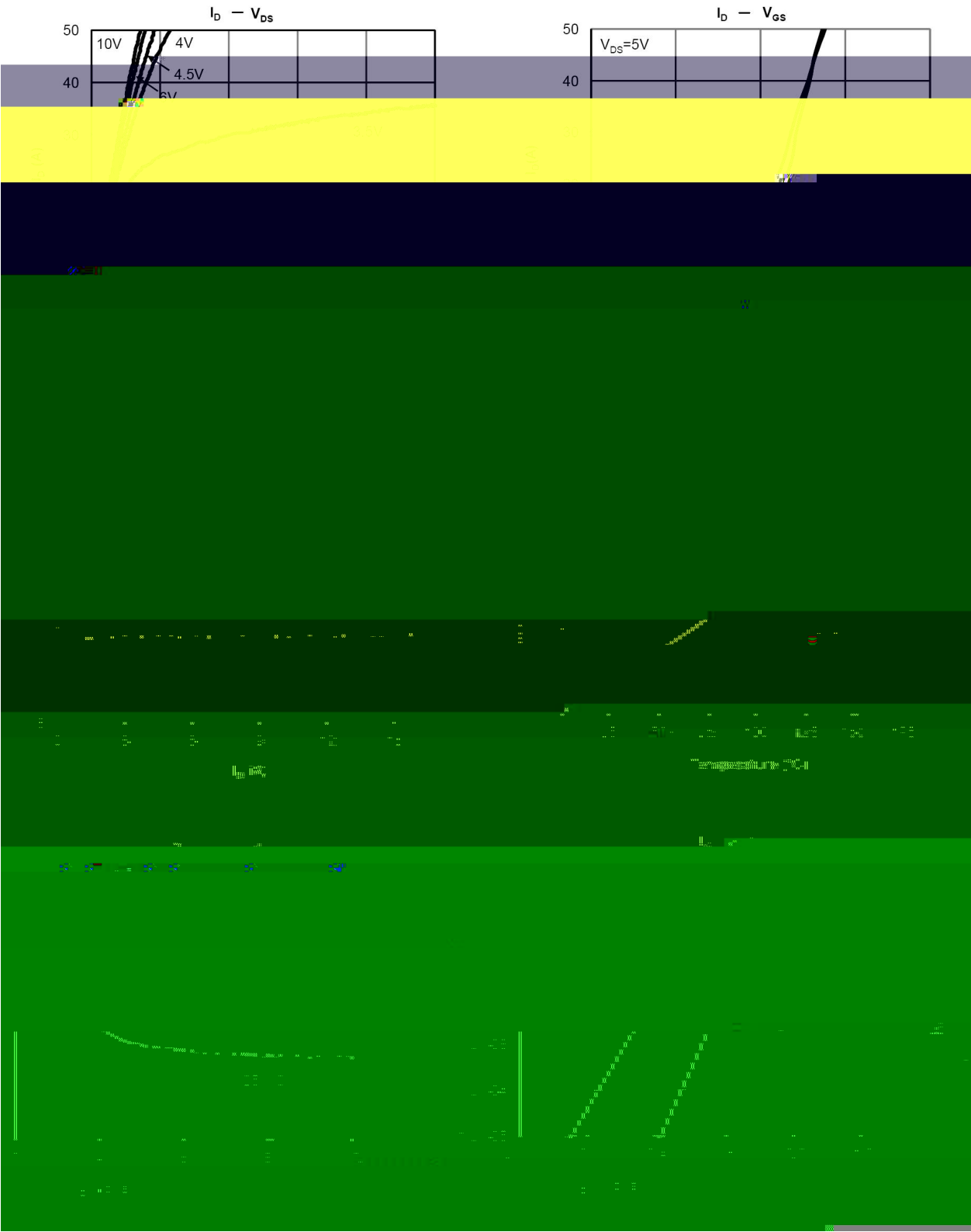
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	$V_{DS}=30V$ $V_{GS}=0V$ $f=1.0MHz$		1340		pF
Output Capacitance	C_{oss}			123		
Reverse Transfer Capacitance	C_{rss}			10		
Gate resistance	R_g	$f=1.0MHz$	0.7	1.5	2.3	"
Total Gate Charge(10V)	Q_g	$V_{DD}=10V$ $I_D=10A$ $V_{DS}=30V$		21	30	nC
Total Gate Charge(4.5V)				9.0	15	
Gate-Source Charge	Q_{gs}			4.7		
Gate-Drain Charge	Q_{gd}			2.6		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V$ $V_{DS}=30V$ $R_L=3.0$ $R_{GEN}=3.0$		6.0		ns
Turn-On Rise Time	t_r			2.5		
Turn-Off Delay Time	$t_{d(off)}$			22		
Turn-Off Fall Time	t_f			2.5		
Body Diode Reverse Recovery Time	t_{rr}	$I_F=10A$ $di/dt=500A/\mu s$		15.5		ns
Body Diode Reverse Recovery Charge	Q_{rr}			55.5		nC

Notes:

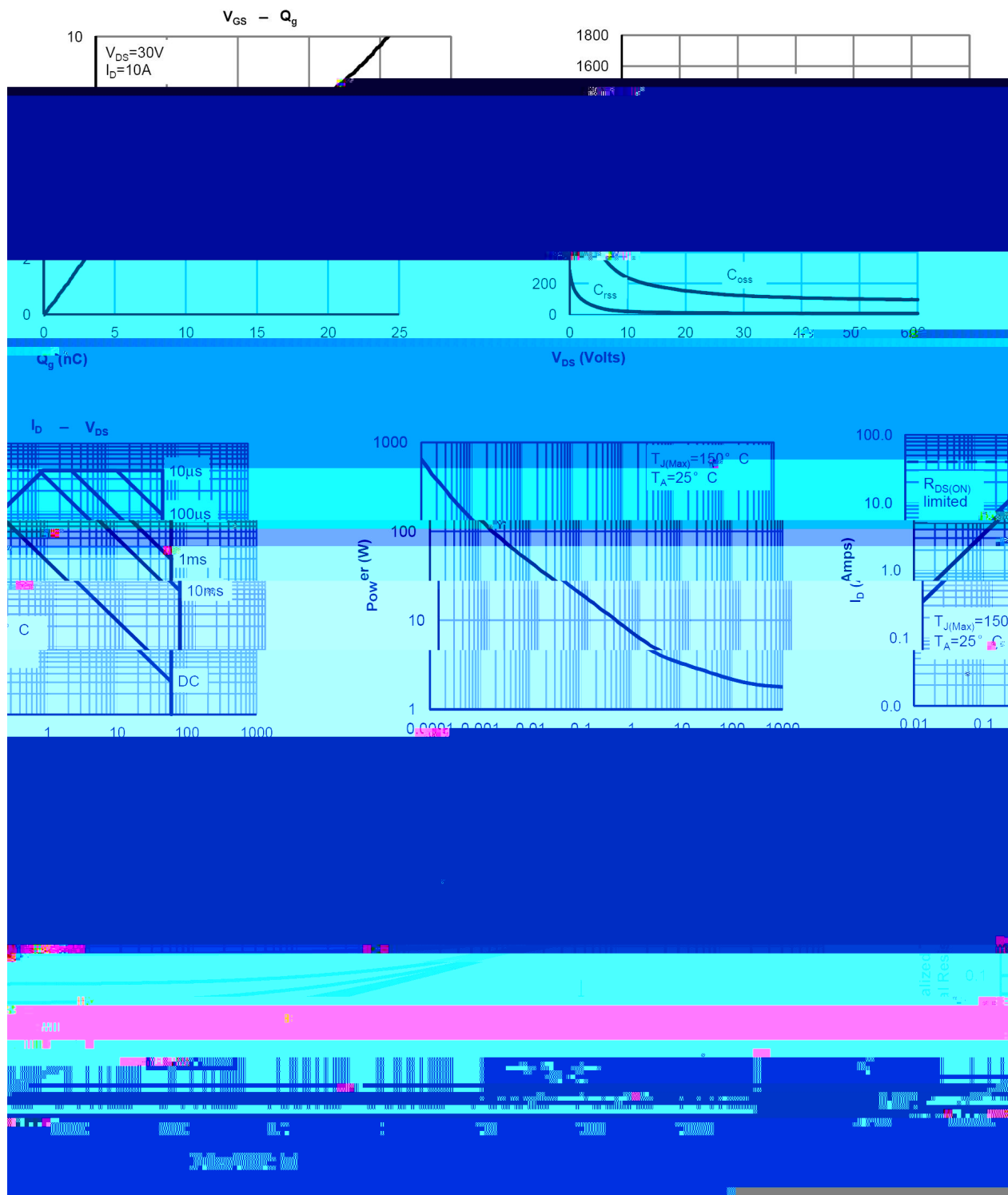
- A. The value of R_{JA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$. The value in any given application depends on the user's specific board design.
- B. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ C$, using 10s junction-to-ambient thermal resistance.
- C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ C$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ C$.
- D. The R_{JA} is the sum of the thermal impedance from junction to lead R_{JL} and lead to ambient.
- E. The static characteristics in Figures 1 to 6 are obtained using <3000s pulses, duty cycle 0.5% max.
- F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}=150^\circ C$. The SOA curve provides a single pulse rating.

/ Electrical Characteristic Curve

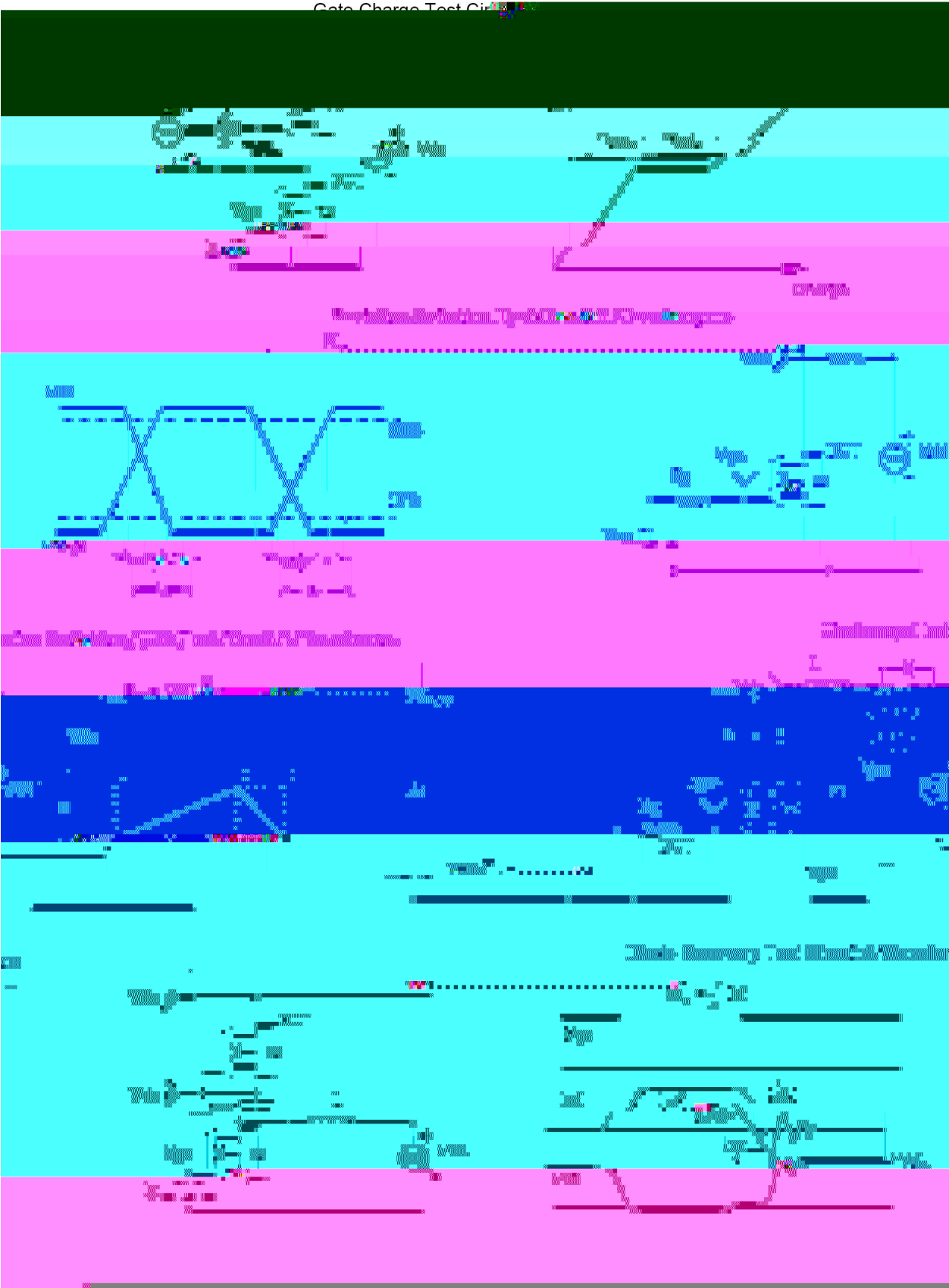




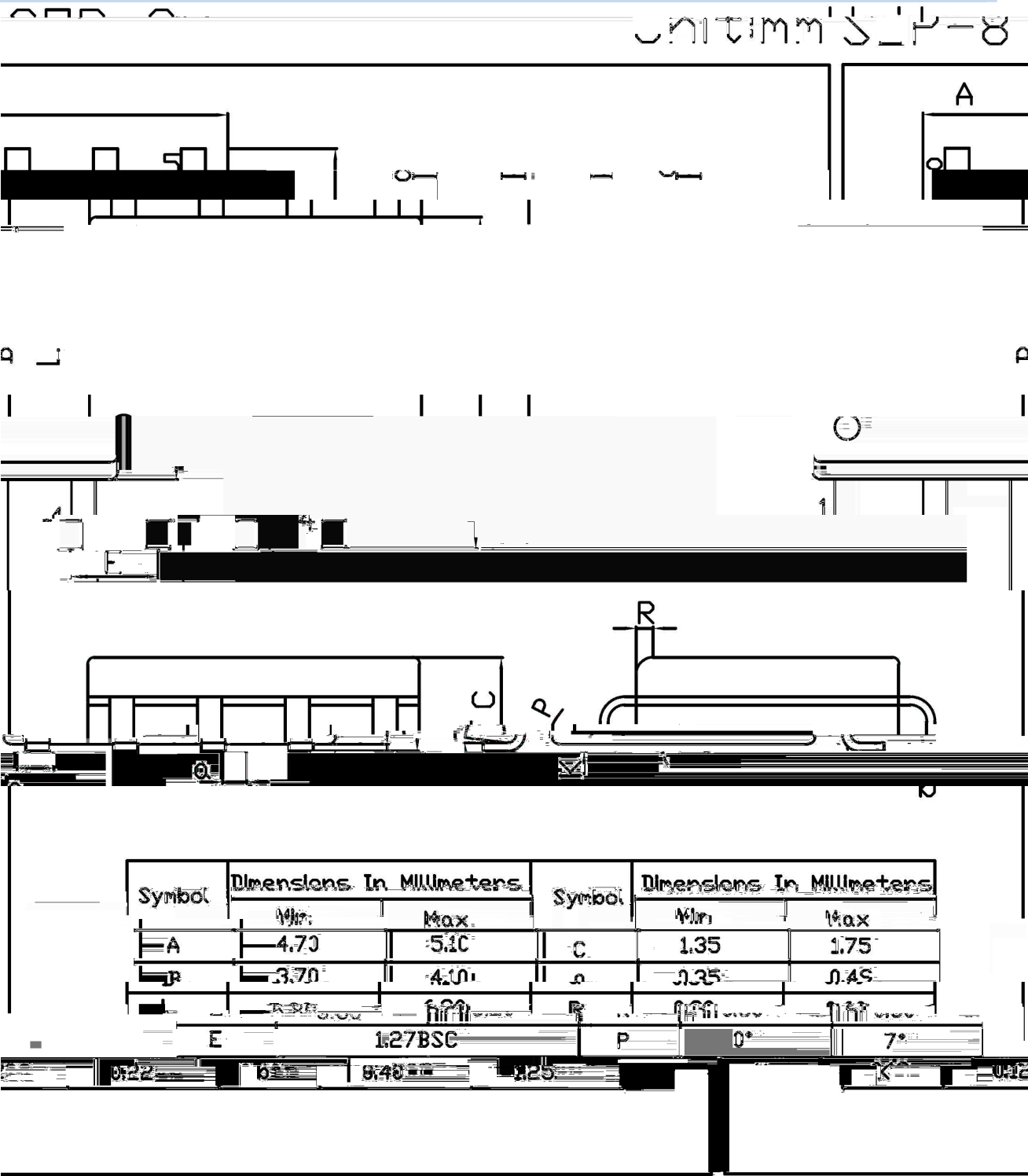
/ Electrical Characteristic Curve



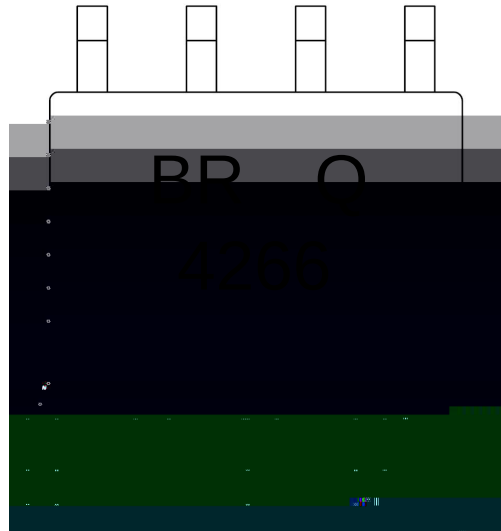
/ Test Circuit & Waveform



/ Package Dimensions



/ Marking Instructions



BR

Q

7599

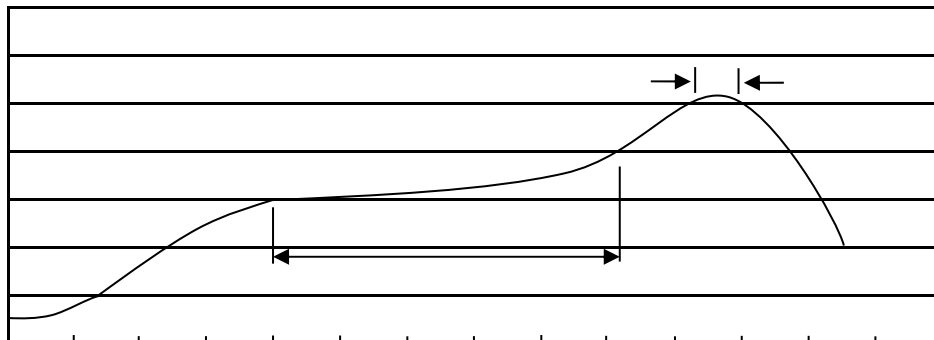
Note:

BR: Company Code

Q: Automobile halogen-free product Code

4266 Product Type

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


() / 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)		
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
SOP/ESOP-8	4,000	2	8,000	6	48,000	13 ×12	360×360×50	380×335×366

/ Notices