

/ Descriptions

VRS0; M M Q MOS 1 N-Channel MOSFET in a SOP-8 Plastic Package.

/ Features

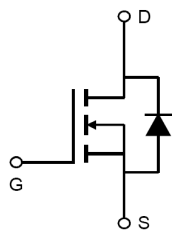
U_{GS} = 4.5V, R_{DS(on)} = 1.2mΩ, Q_g = 1.2nC, f_{sw} = 100kHz, T_j = 175°C, DHF0T434, 1.0%.

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

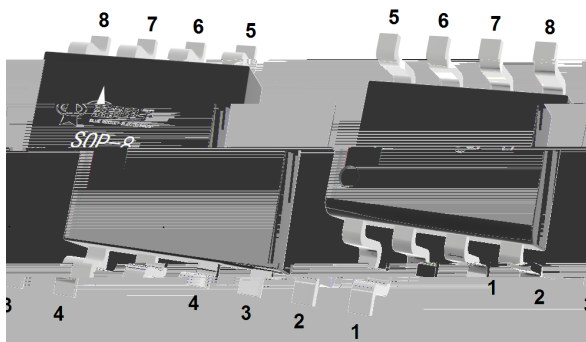
/ Applications

GF2GF = DF2GF, 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

M 1 " 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}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 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

I Electrical Characteristics(Ta=25 °C)

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	Ω
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}	$I_F=10A$ $di/dt=500A/μs$		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.

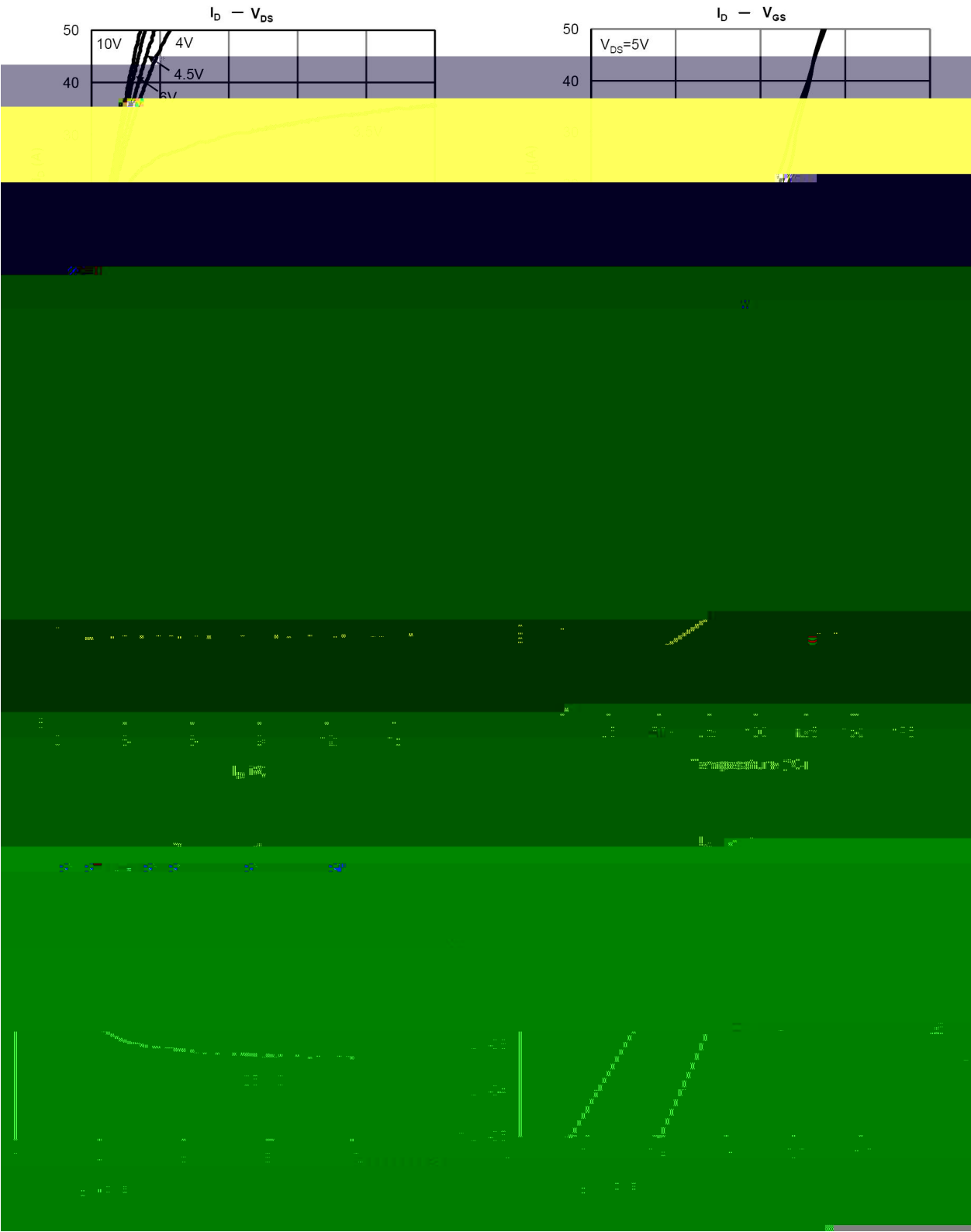
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}C$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^{\circ}C$.

D. The R_{JA} is the sum of the thermal impedance from junction to lead R_{JL} and lead to ambient.

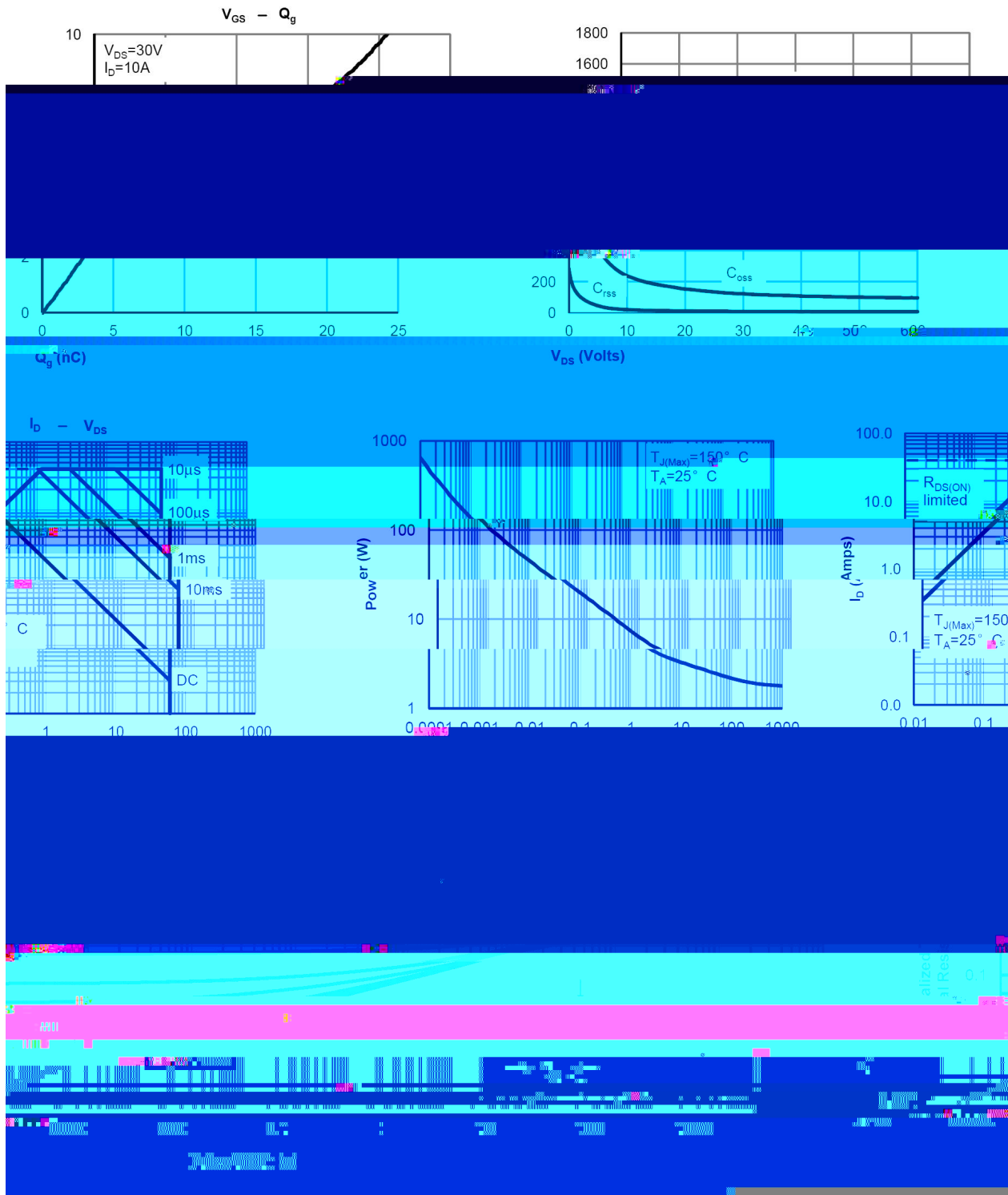
E. The static characteristics in Figures 1 to 6 are obtained using <300Ps pulses, duty cycle 0.5% max.

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.

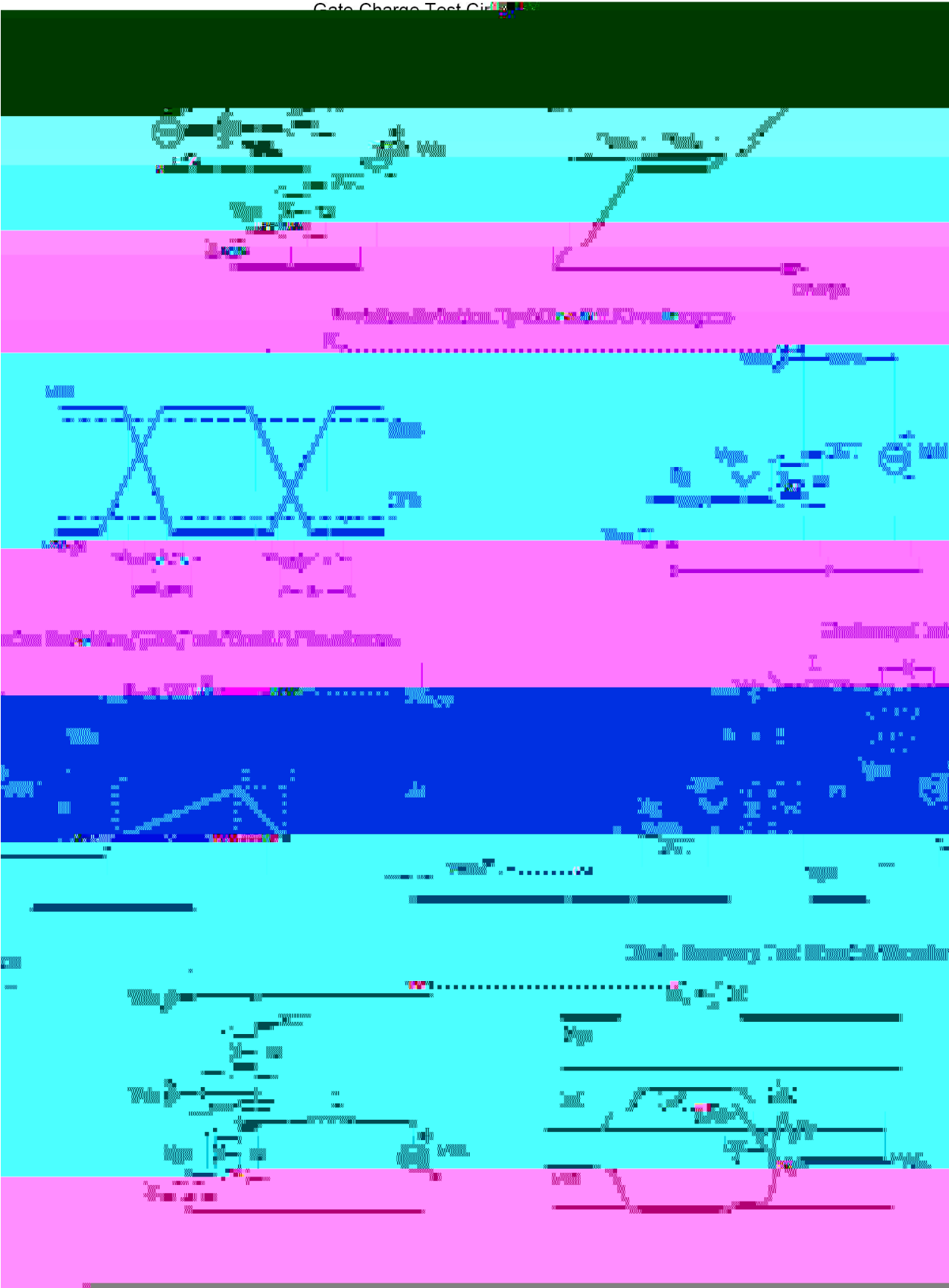
/ Electrical Characteristic Curve



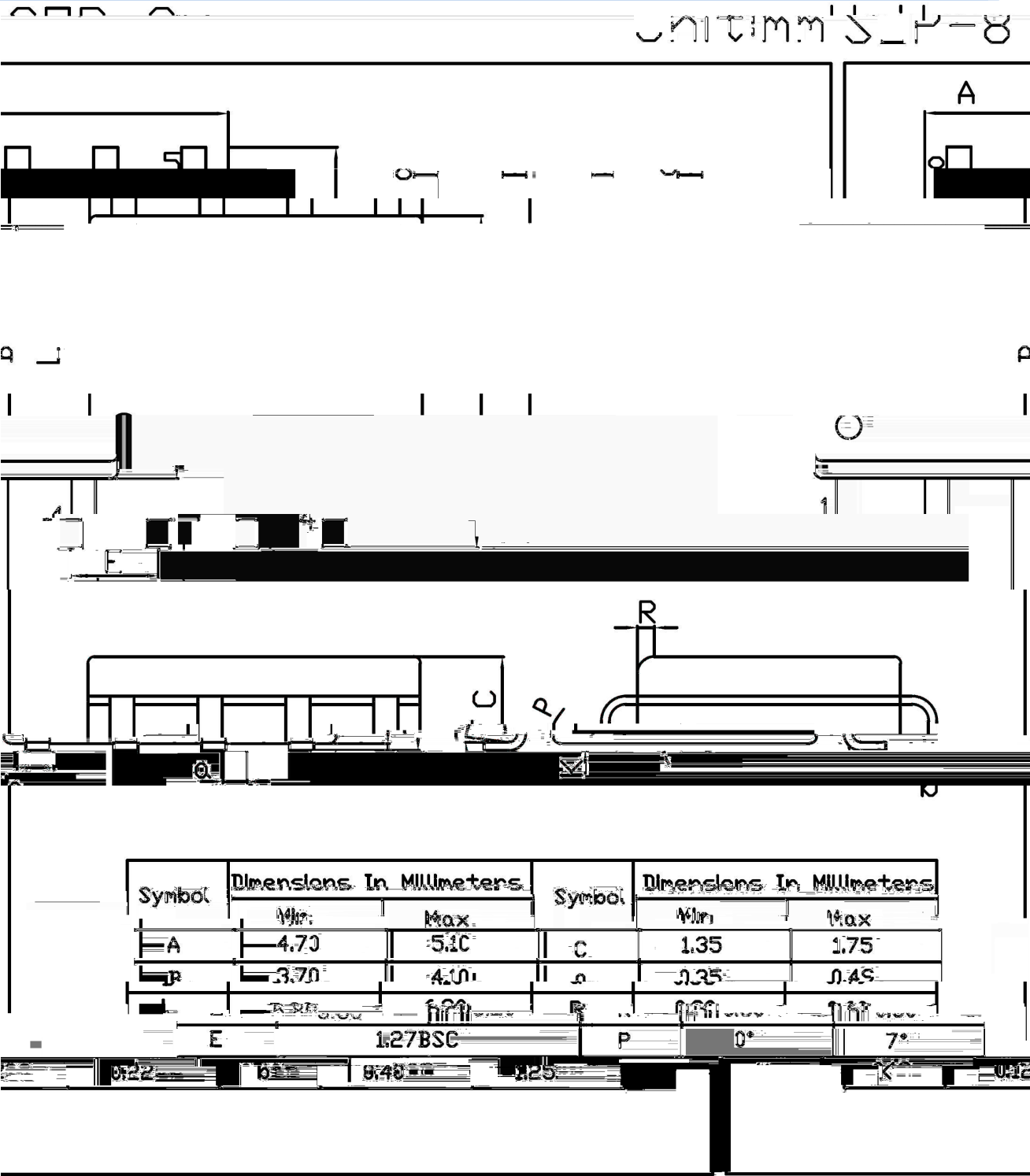
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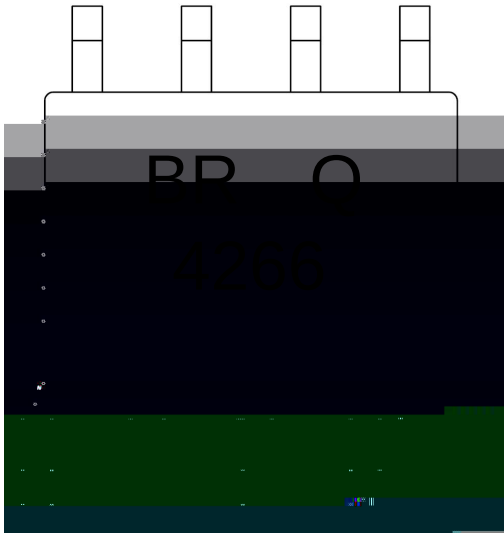
/ Test Circuit & Waveform



/ Package Dimensions

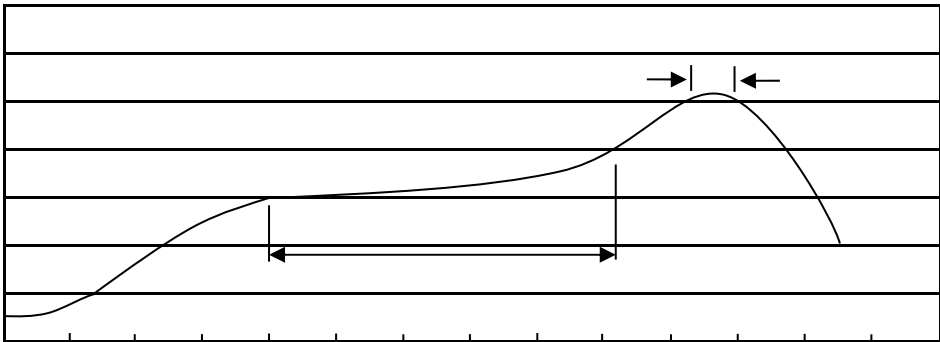


/ Marking Instructions



” χ	
BR χ	ꯏ ꯚ ꯍꯤ
Q χ	ꯏ ꯈ ꯩ ꯅ ꯛ %
7599 χ	ꯏ ꯚ ꯍꯤ
---- χ	ꯏ ꯅ ꯅ ꯩ ꯍꯤ ꯅ ꯅ ꯅ ꯩ ꯍꯤ ꯚ
Note:	
BR:	Company Code
Q:	Automobile halogen-free product Code
4266 χ	Product Type
****:	Lot No. Code, code change with Lot No

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



- Note:
1. Preheating: 150~200 ℃, Time: 60~120sec;
 2. Peak Temp.: 255±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)		
	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