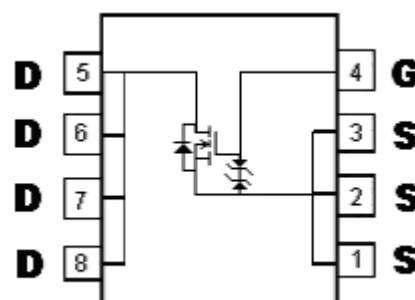
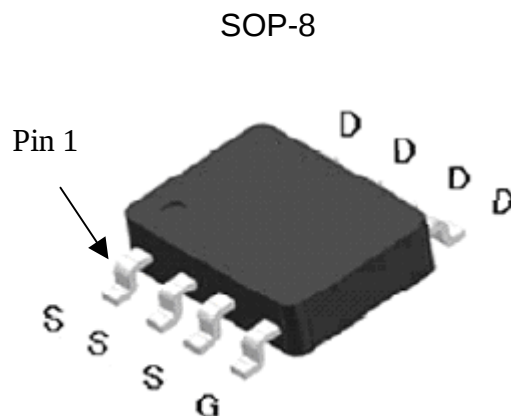


N-Channel Enhancement Mode Power MOSFET

Features:

- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- ESD protected gate
- Pb-free & Halogen-free package

BV_{DSS}	60V
I_D @ T_A=25°C, V_{GS}=10V	9.3A
R_{DS(ON)}@V_{GS}=10V, I_D=8A	13.1 mΩ (typ)
R_{DS(ON)}@V_{GS}=4.5V, I_D=6A	15.9 mΩ (typ)
R_{DS(ON)}@V_{GS}=4V, I_D=4A	17.2 mΩ (typ)



G : Gate
D : Drain
S : Source

Ordering Information

Device	Package	Shipping
KWB20N06KQ8	SOP-8 (Pb-free lead plating and halogen-free package)	2500 pcs / tape & reel

Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ T _A =25°C, V _{GS} =10V	I _D	9.3	A
Continuous Drain Current @ T _A =70°C, V _{GS} =10V		7.4	
Pulsed Drain Current	I _{DM}	40 *1	
Single Pulse Avalanche Current	I _{AS}	9.3	
Avalanche Energy @ L=2mH, I _D =9.3A, V _{DD} =15V	E _{AS}	86	mJ
Total Power Dissipation	P _D	T _A =25 °C 3.1	W
		T _A =70 °C 2	
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

Note : *1. Pulse width limited by maximum junction temperature

*2. Duty cycle ≤ 1%

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case	R _{θJC}	8	°C/W
Thermal Resistance, Junction-to-ambient (Note)	R _{θJA}	40	

Note : When mounted on a 1 in² pad of 2 oz copper, ≤10s; 125 °C/W when mounted on minimum pad.

Characteristics (Tc=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	60	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1.2	-	2.5		V _{DS} = V _{GS} , I _D =250μA
G _{FS}	-	17	-	S	V _{DS} =5V, I _D =8A
I _{GSS}	-	-	±10	μA	V _{GS} =±16V
I _{DSS}	-	-	1		V _{DS} =60V, V _{GS} =0V
	-	-	25		V _{DS} =48V, V _{GS} =0V, T _j =85°C
*R _{DS(ON)}	-	13.1	17	mΩ	V _{GS} =10V, I _D =8A
	-	15.9	21		V _{GS} =4.5V, I _D =6A
	-	17.2	26		V _{GS} =4V, I _D =4A
Dynamic					
Q _g *1, 2	-	18.5	-	nC	V _{DS} =48V, I _D =9.3A, V _{GS} =10V
Q _{gs} *1, 2	-	1.9	-		
Q _{gd} *1, 2	-	6.5	-		
C _{iss}	-	736	-	pF	V _{DS} =20V, V _{GS} =0V, f=1MHz
C _{oss}	-	140	-		
C _{rss}	-	70	-		

Characteristics (Cont. T_c=25°C, unless otherwise specified)

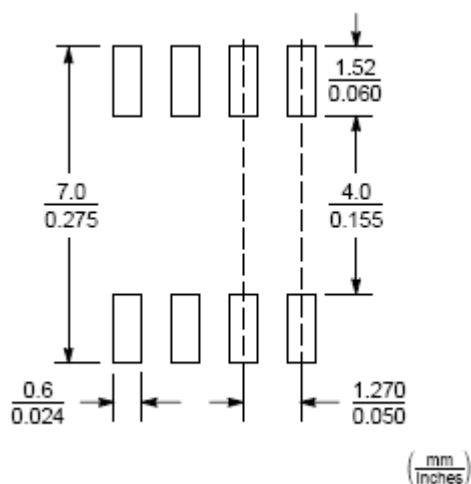
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Dynamic					
t _{d(ON)} *1, 2	-	8.6	-	ns	V _{DS} =30V, I _D =1A, V _{GS} =10V, R _G =6Ω
t _r *1, 2	-	17.6	-		
t _{d(OFF)} *1, 2	-	39.8	-		
t _f *1, 2	-	20	-		
Source-Drain Diode Ratings and Characteristics					
I _S *1	-	-	4	A	
I _{SM} *3	-	-	16		
V _{SD} *1	-	0.79	1.2	V	I _S =4A, V _{GS} =0V
t _{rr}	-	14	-	ns	I _F =4A, dI _F /dt=100A/μs
Q _{rr}	-	10	-	nC	

Note : *1.Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

*2.Independent of operating temperature

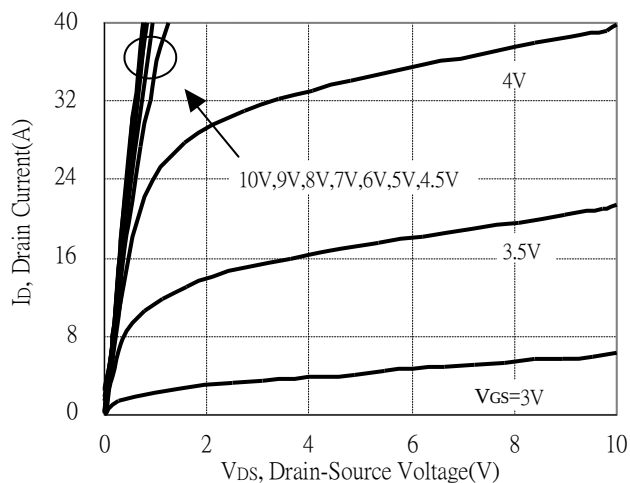
*3.Pulse width limited by maximum junction temperature.

Recommended Soldering Footprint

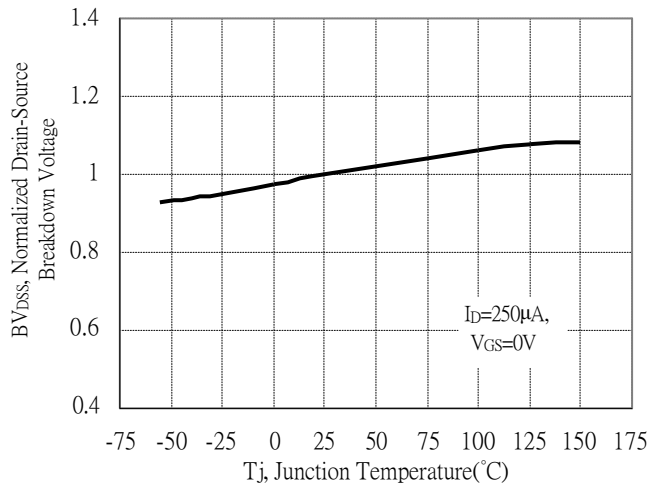


Typical Characteristics

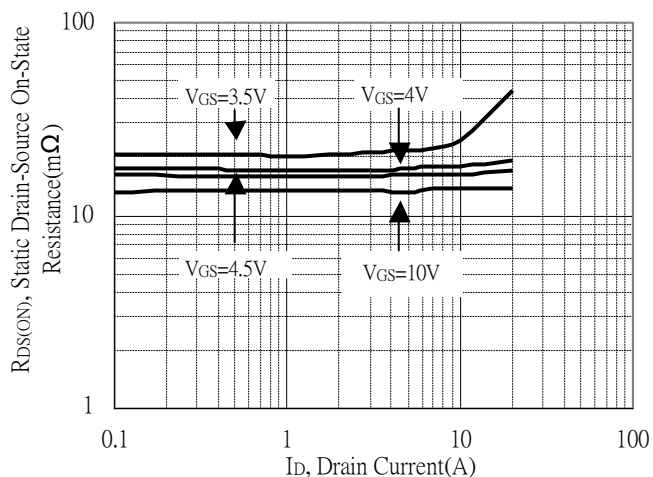
Typical Output Characteristics



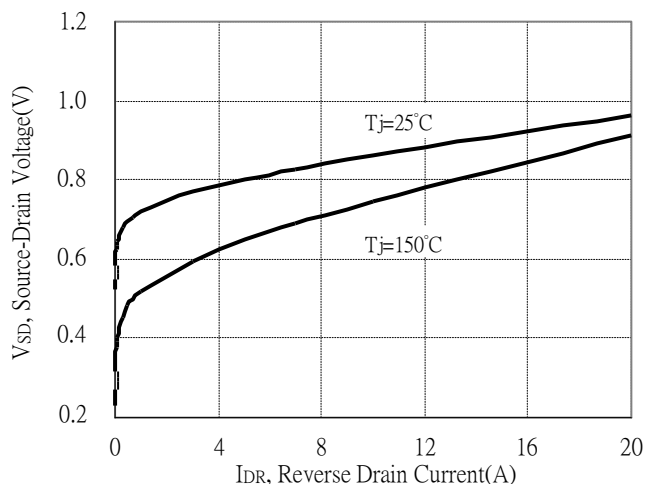
Breakdown Voltage vs Ambient Temperature



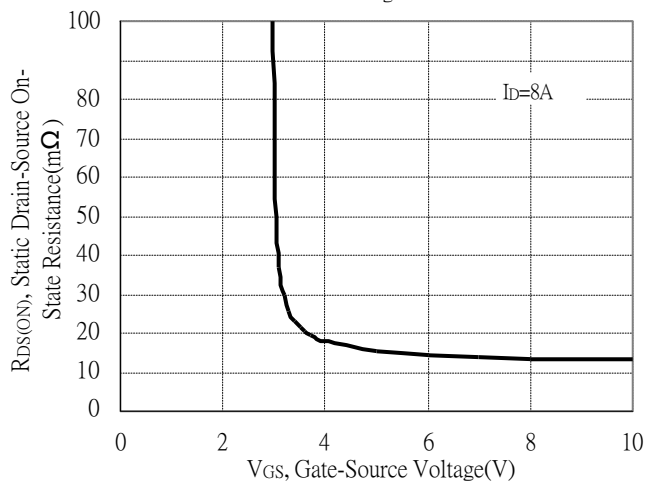
Static Drain-Source On-State resistance vs Drain Current



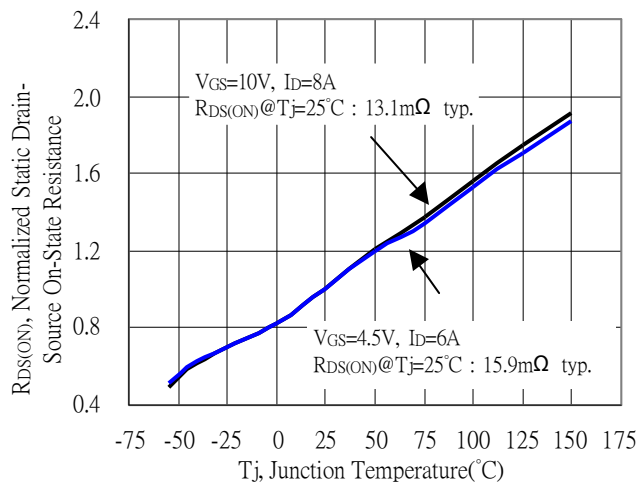
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

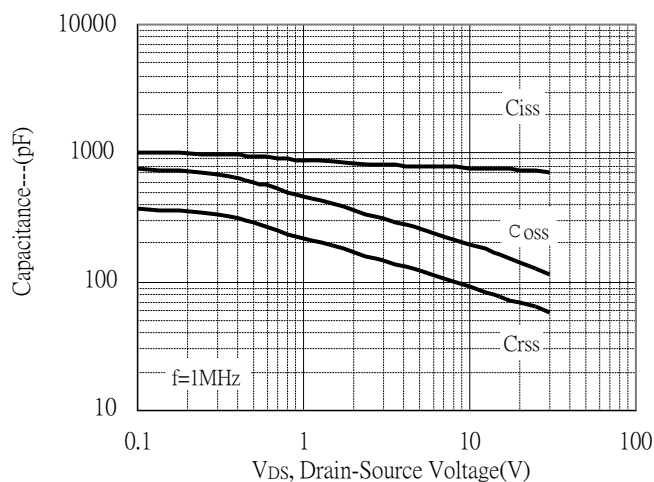


Drain-Source On-State Resistance vs Junction Temperature

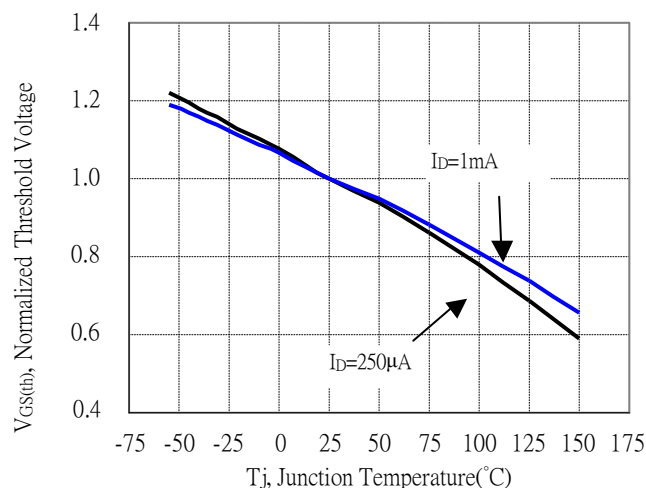


Typical Characteristics(Cont.)

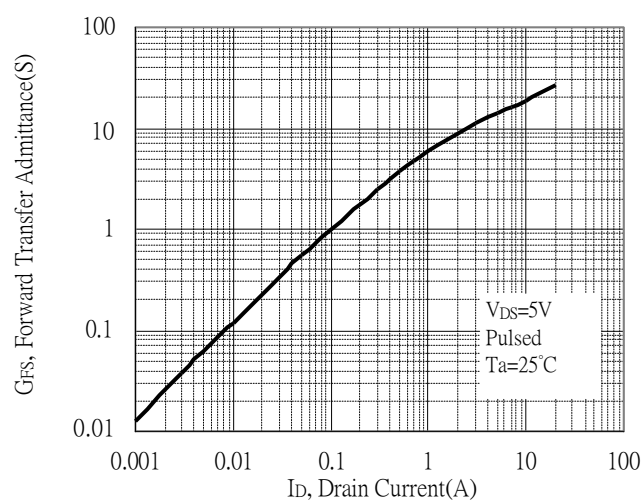
Capacitance vs Drain-to-Source Voltage



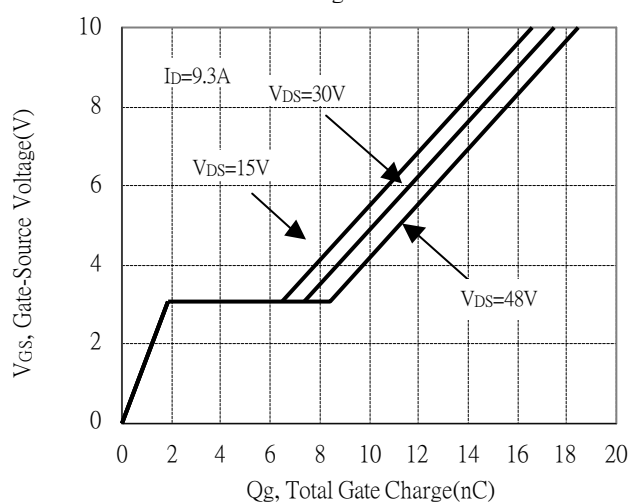
Threshold Voltage vs Junction Temperature



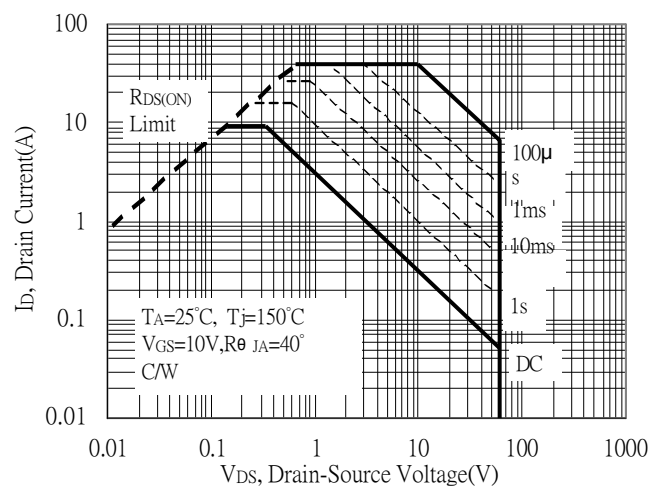
Forward Transfer Admittance vs Drain Current



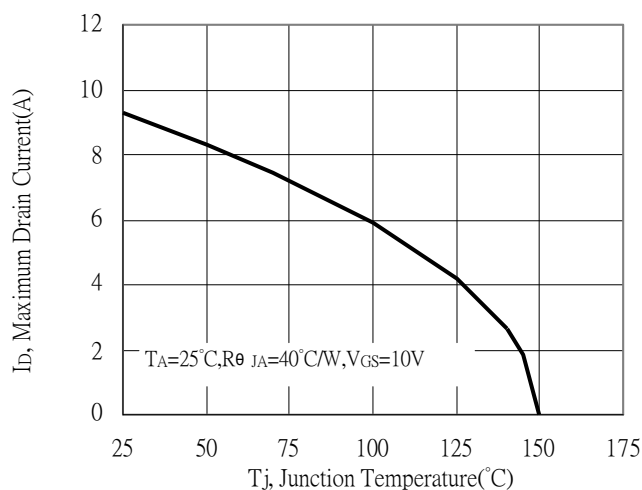
Gate Charge Characteristics



Maximum Safe Operating Area

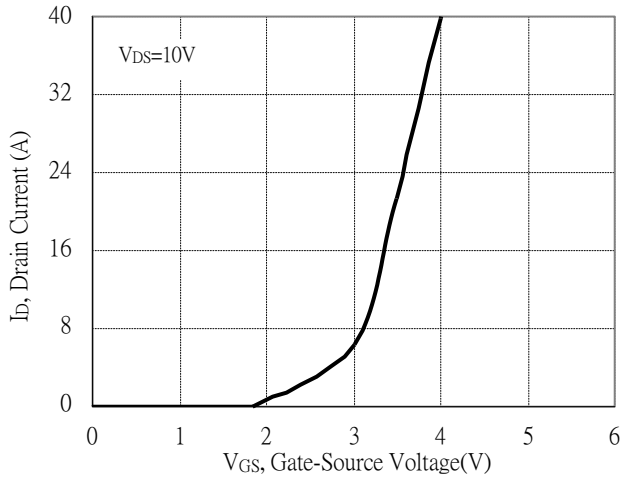


Maximum Drain Current vs Junction Temperature

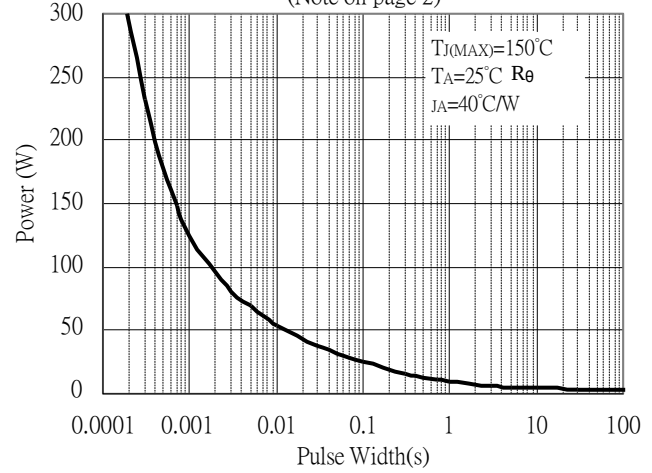


Typical Characteristics(Cont.)

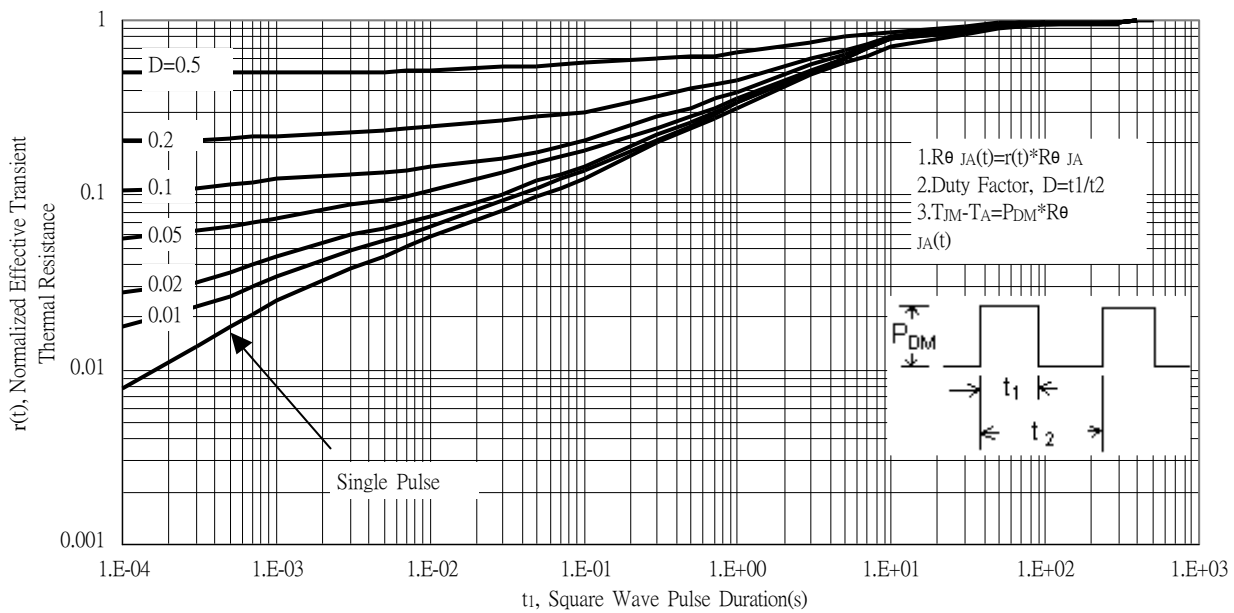
Typical Transfer Characteristics



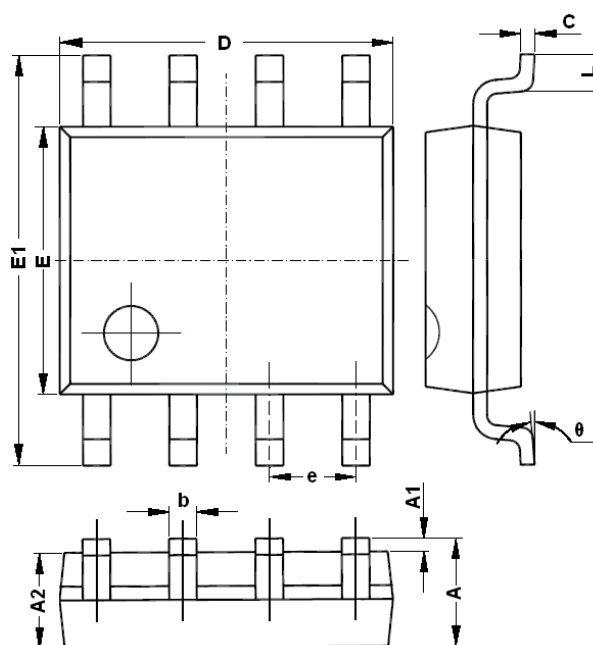
Single Pulse Power Rating, Junction to Ambient
 (Note on page 2)



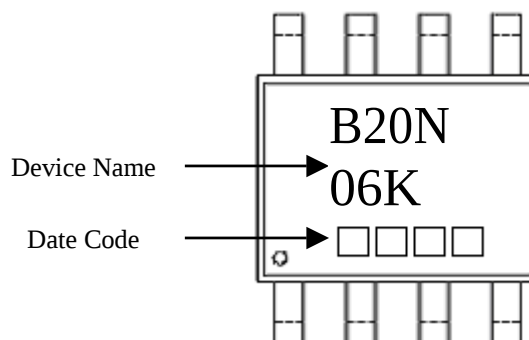
Transient Thermal Response Curves



SOP-8 Dimension



Marking:



8-Lead SOP-8 Plastic Package
 Code: Q8

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069	E	3.800	4.000	0.150	0.157
A1	0.100	0.250	0.004	0.010	E1	5.800	6.200	0.228	0.244
A2	1.350	1.550	0.053	0.061	e	1.270 (BSC)		0.050 (BSC)	
b	0.330	0.510	0.013	0.020	L	0.400	1.270	0.016	0.050
c	0.170	0.250	0.006	0.010	θ	0	8°	0	8°
D	4.700	5.100	0.185	0.200					