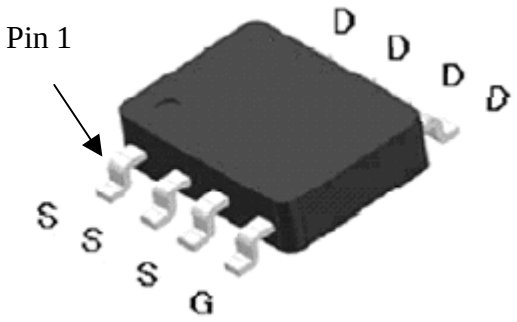
N-Channel Logic Level Enhancement Mode Power MOSFET

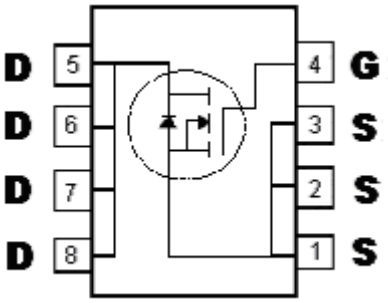
Features:

- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- Repetitive Avalanche Rated
- Pb-free lead plating and halogen-free package

SOP-8



BV_{DSS}	30V
I_D@ T_A=25°C, V_{GS}=10V	19A
I_D@ T_C=25°C, V_{GS}=10V	27A
R_{DSON}@V_{GS}=10V, I_D=18A	3.1mΩ (typ)
R_{DSON}@V_{GS}=4.5V, I_D=15A	4.0mΩ (typ)



G：Gate D：Drain S：Source

Ordering Information

Device	Package	Shipping
KWB3D0N03BQ8	SOP-8 (Pb-free lead plating and halogen-free package)	2500 pcs / tape & reel

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current @ T_A=25°C, V_{GS}=10V		I_{DSM}	19	A
Continuous Drain Current @ T_A=70°C, V_{GS}=10V			15.2	
Continuous Drain Current @ T_C=25°C, V_{GS}=10V		I_D	27	
Continuous Drain Current @ T_C=100°C, V_{GS}=10V			17	
Pulsed Drain Current		I_{DM}	108 *1	
Avalanche Current		I_{AS}	19	
Avalanche Energy @ L=0.5mH, I_D=19A, V_{DD}=20V		E_{AS}	90 *3	mJ
Repetitive Avalanche Energy @ L=0.05mH		E_{AR}	0.6 *2	
Total Power Dissipation	T_A=25℃	P_{DSM}	3.1 *4	W
	T_A=70℃		2.0 *4	
	T_C=25℃	P_D	6.3	
	T_C=100℃		2.5	
Operating Junction and Storage Temperature Range		Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	20	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	40 *4	

Note : 1. Pulse width limited by maximum junction temperature.
2. Duty cycle≤1%.
3. 100% tested by conditions of L=0.5mH, V_{GS}=10V, I_{AS}=18A, V_{DD}=20V.
4. Surface mounted on 1 in² copper pad of FR-4 board, t≤10s; 125°C/W when mounted on minimum copper pad.

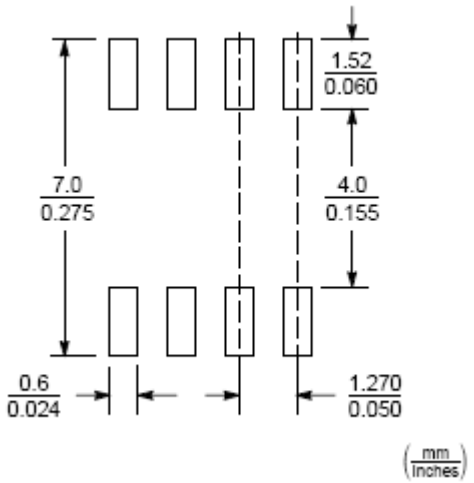
Characteristics (T_C=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	1.0	-	2.5		V_{DS} = V_{GS}, I_D=250μA
G_{FS} *1	-	21	-	S	V_{DS} =10V, I_D=18A
I_{GSS}	-	-	±100	nA	V_{GS}=±20V
I_{DSS}	-	-	1	μA	V_{DS} =30V, V_{GS} =0V
	-	-	25		V_{DS} =30V, V_{GS} =0V, Tj=85°C
$R_{DS(ON)}$ *1	-	3.1	4	mΩ	V_{GS} =10V, I_D=18A
	-	4.0	6		V_{GS} =4.5V, I_D=15A

Dynamic					
Ciss	-	2321	-	pF	V_{GS}=0V, V_{DS}=15V, f=1MHz
Coss	-	400	-		
Crss	-	220	-		
Qg (V_{GS}=10V) *1, 2	-	51	-	nC	V_{DS}=15V, V_{GS}=10V, I_D=18A
Qg (V_{GS}=4.5V) *1, 2	-	26	-		
Qgs *1, 2	-	8.5	-		
Qgd *1, 2	-	11.1	-		
$t_{d(ON)}$ *1, 2	-	17	-	ns	V_{DS}=15V, I_D=18A, V_{GS}=10V, R_{GS}=3Ω
tr *1, 2	-	19	-		
$t_{d(OFF)}$ *1, 2	-	55	-		
t_f *1, 2	-	12	-		
Rg	-	1.4	-	Ω	f=1MHz
Source-Drain Diode					
I_S *1	-	-	9	A	
I_{SM} *3	-	-	36		
V_{SD} *1	-	0.69	1	V	I_S=1A, V_{GS}=0V
trr	-	15	-	ns	I_F=18A, dI_F/dt=100A/μs
Qrr	-	6.7	-	nC	

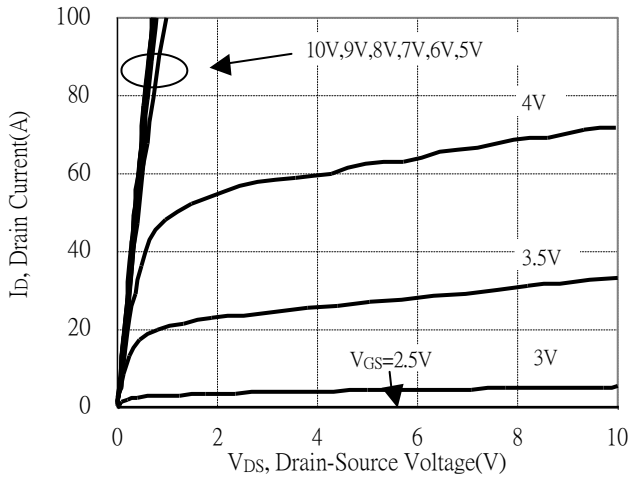
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.

Recommended Soldering Footprint

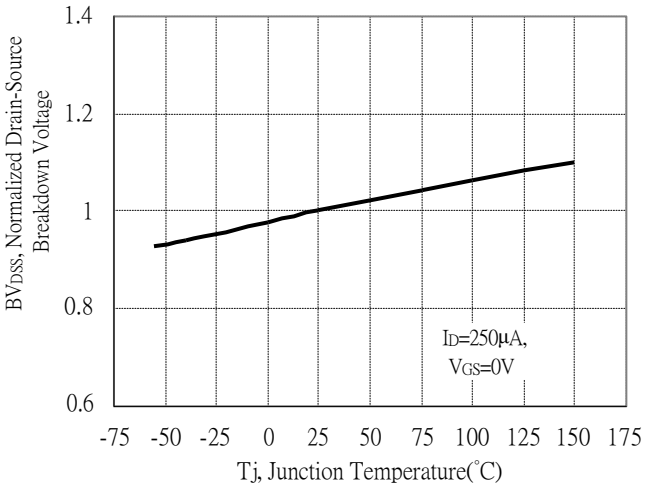


Typical Characteristics

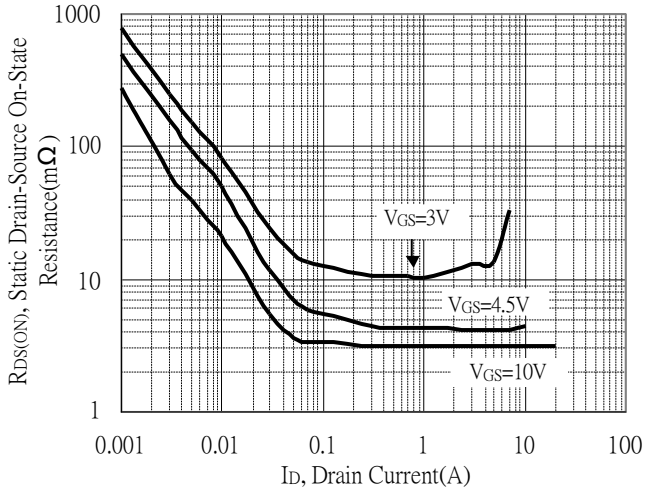
Typical Output Characteristics



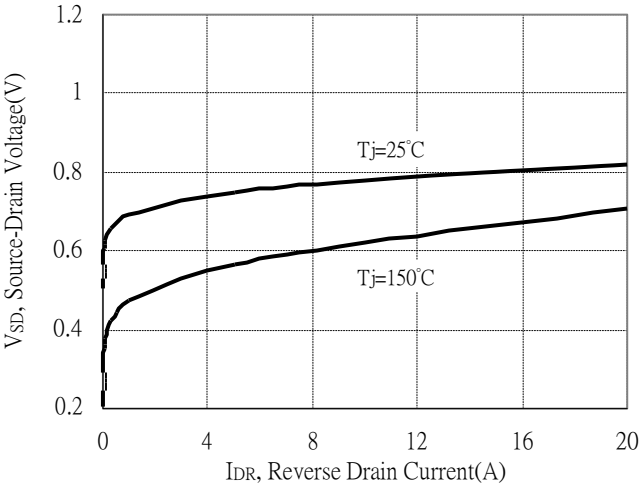
Brekdown Voltage vs Ambient Temperature



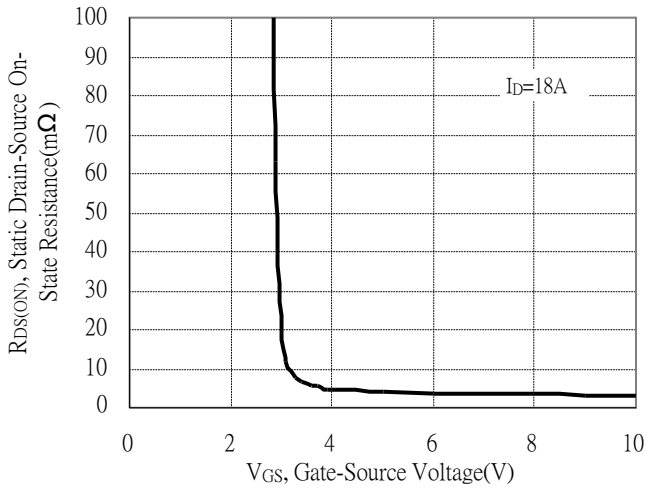
Static Drain-Source On-State resistance vs Drain Current



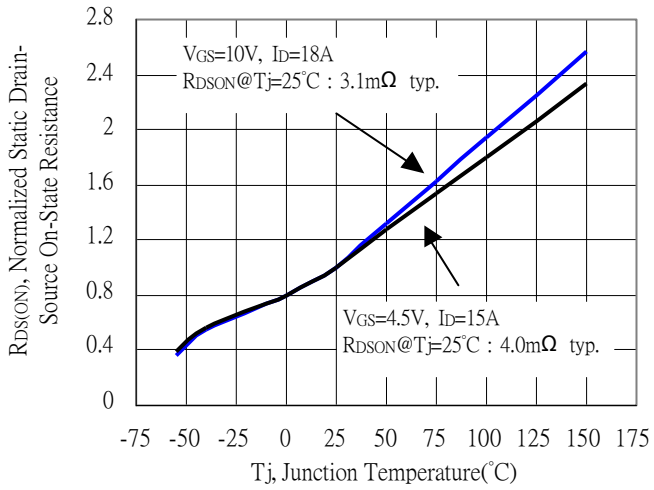
Reverse Drain Current vs Source-Drain Voltage



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

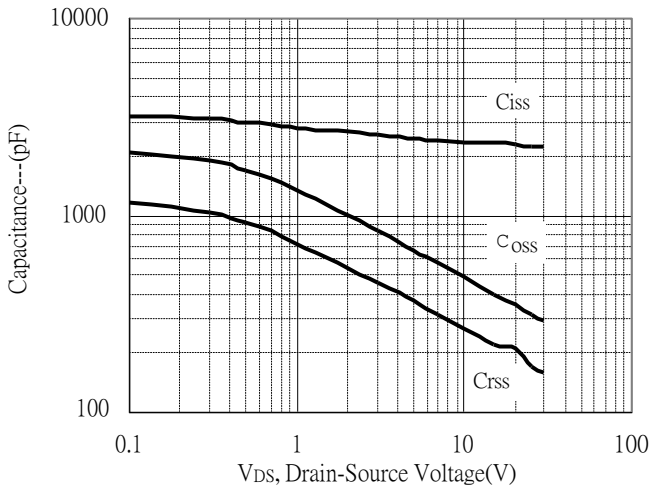


Drain-Source On-State Resistance vs Junction Tempearture

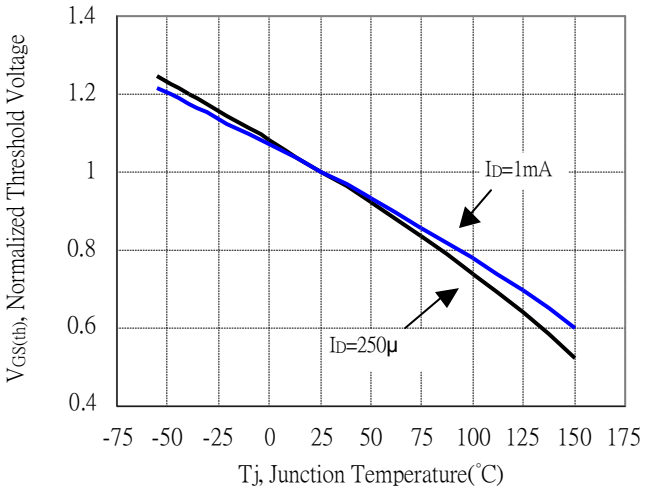


Typical Characteristics(Cont.)

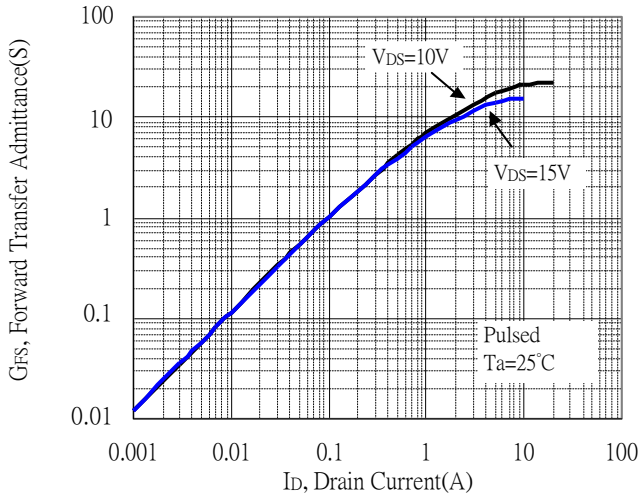
Capacitance vs Drain-to-Source Voltage



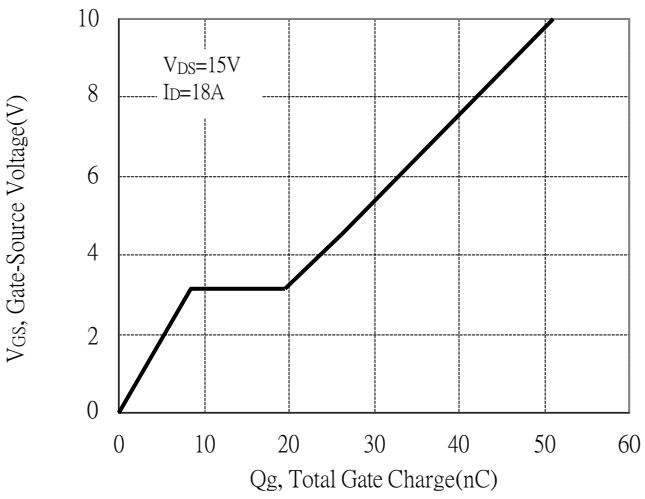
Threshold Voltage vs Junction Tempearture



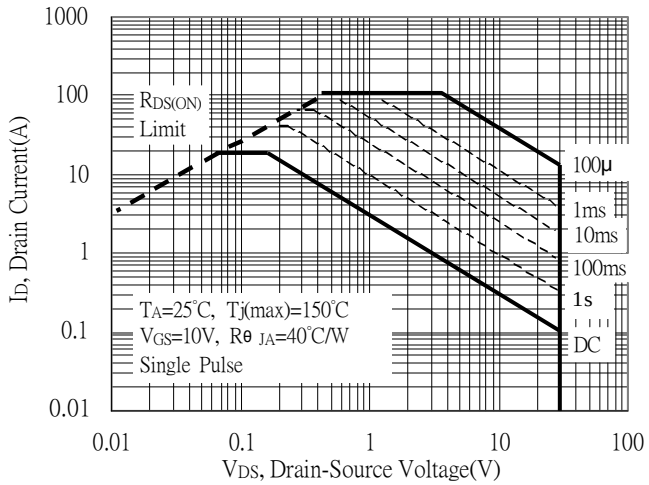
Forward Transfer Admittance vs Drain Current



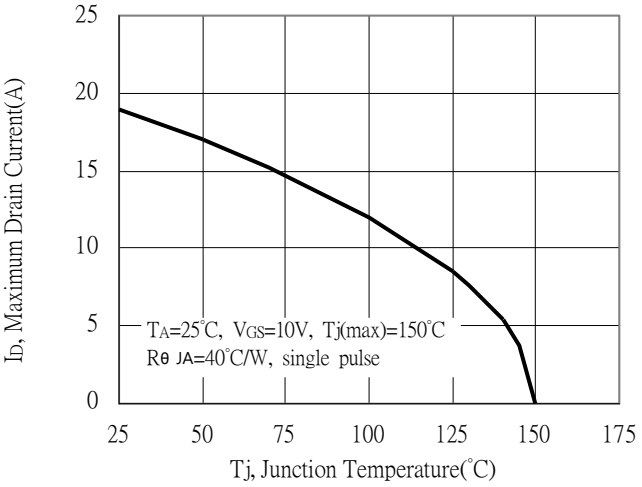
Gate Charge Characteristics



Maximum Safe Operating Area

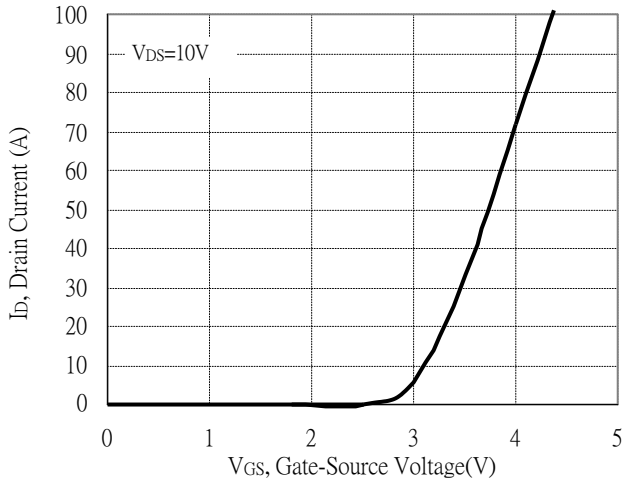


Maximum Drain Current vs Junction Temperature

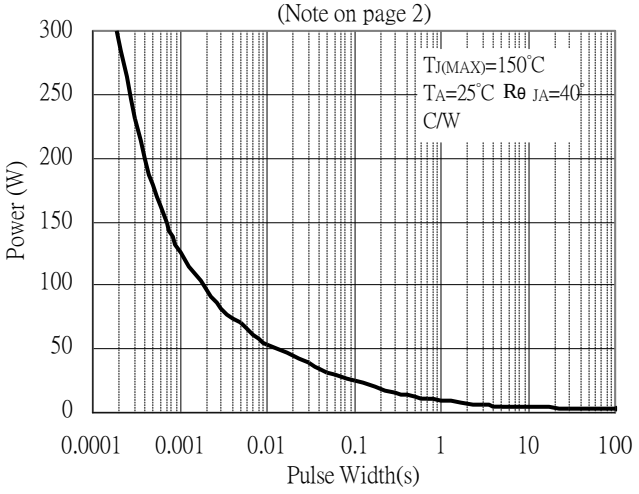


Typical Characteristics(Cont.)

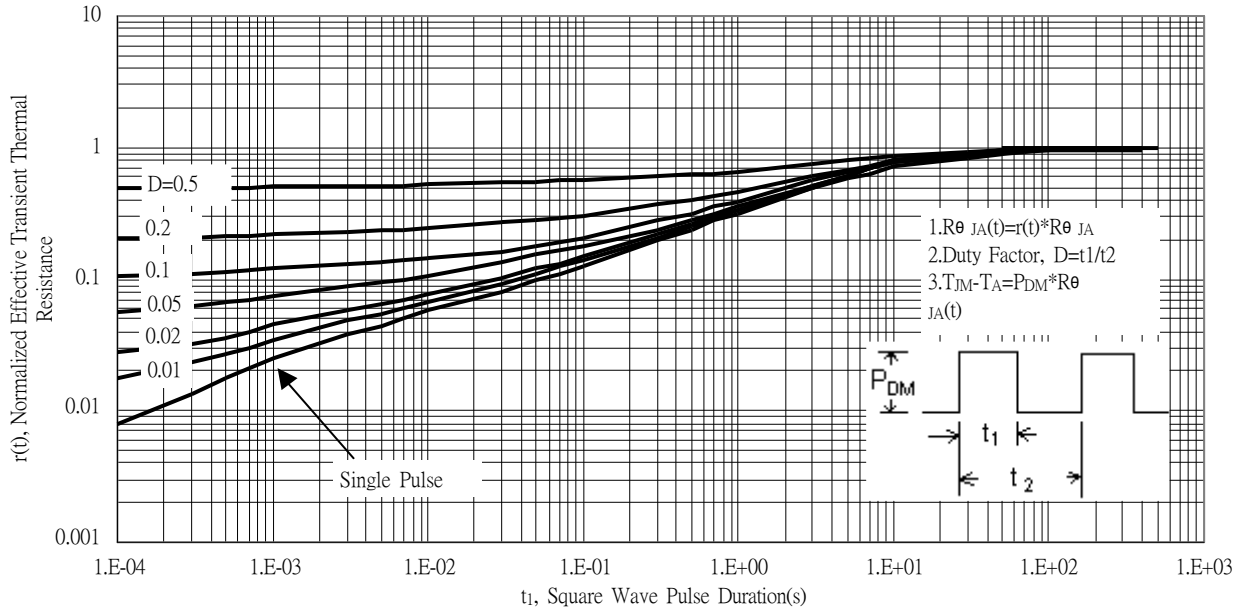
Typical Transfer Characteristics



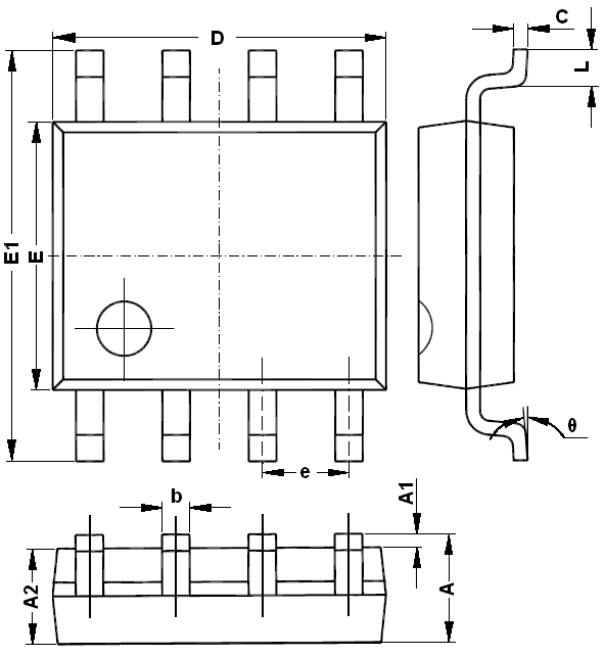
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



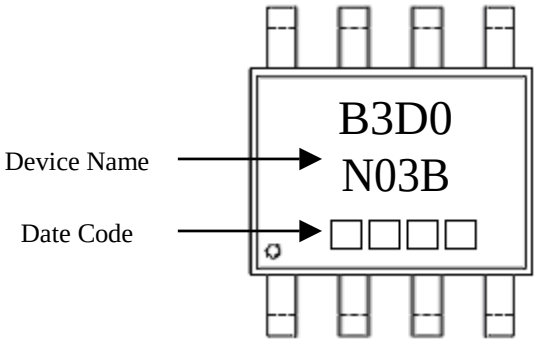
Transient Thermal Response Curves



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					