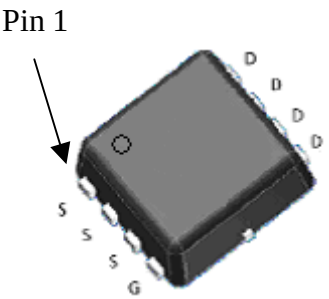
N-Channel Logic Level Enhancement Mode Power MOSFET

Features:

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

Outline

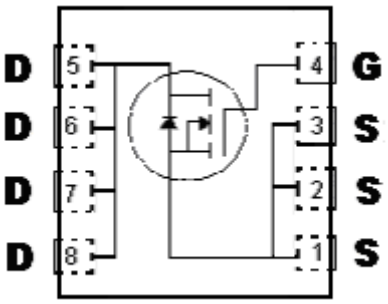
DFN3x3



BV_{DSS}		30V
I_D @ T_C=25°C, V_{GS}=10V		44A
I_D @ T_A=25°C, V_{GS}=10V		14A
$R_{DSON(TYP)}$	V_{GS}=10V, I_D=14A	7.3mΩ
	V_{GS}=4.5V, I_D=12A	11.2mΩ

Equivalent Circuit

KWB11N03BV8



G：Gate D：Drain S：Source

Ordering Information

Device	Package	Shipping
KWB11N03BV8	DFN3x3 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C, unless otherwise specified)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current @ V_{GS}=10V, T_C=25°C(Silicon Limit)		I_D	44	A
Continuous Drain Current @ V_{GS}=10V, T_C=100°C(Silicon Limit)			27.8	
Continuous Drain Current @ V_{GS}=10V, T_C=25°C(Package Limit)			26	
Continuous Drain Current @ V_{GS}=10V, T_A=25°C			14	
Continuous Drain Current @ V_{GS}=10V, T_A=70°C			11.2	
Pulsed Drain Current		I_{DM}	56 *1	
Avalanche Current		I_{AS}	30	
Avalanche Energy @ L=0.1mH, I_D=21A, R_G=25Ω		E_{AS}	22	mJ
Total Power Dissipation	T_C=25℃	P_D	36	W
	T_A=25℃		3.5 *2	
Operating Junction and Storage Temperature Range		Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	3.5	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	36 *2	°C/W

Note : 1. Pulse width limited by maximum junction temperature.
2. Surface mounted on a 1 in²pad of 2oz copper, t≤10s. In practice $R_{th,j-a}$ will be determined by customer's PCB characteristics. 125°C/W when mounted on a minimum pad of 2 oz. copper.

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

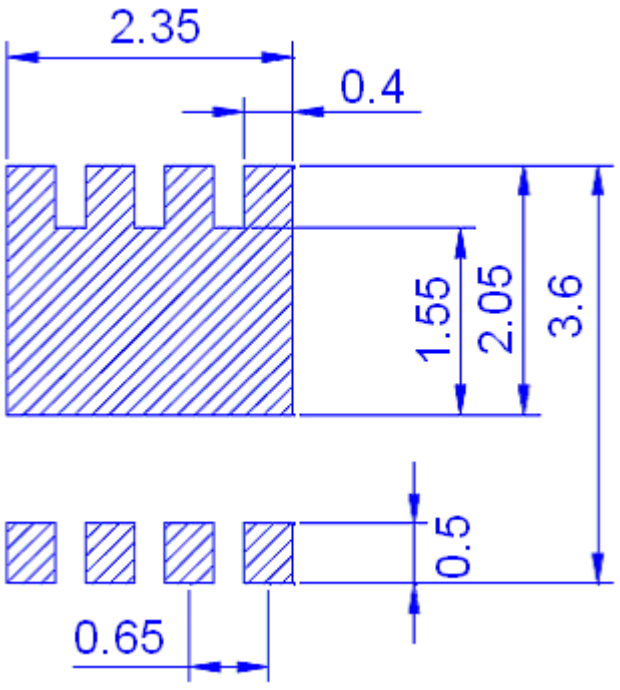
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	1.2	-	2.5		V_{DS} = V_{GS}, I_D=250μA
G_{FS} *1	-	18	-	S	V_{DS} =5V, I_D=11A
I_{GSS}	-	-	±100	nA	V_{GS}=±25V
I_{DSS}	-	-	1	μA	V_{DS} =30V, V_{GS} =0V
	-	-	5		V_{DS} =24V, V_{GS} =0V, Tj=55°C
$R_{DS(ON)}$ *1	-	7.3	8.8	mΩ	V_{GS} =10V, I_D=14A
	-	11.2	13.4		V_{GS} =4.5V, I_D=12A
Dynamic					
Ciss	-	745	-	pF	V_{DS}=15V, V_{GS}=0V, f=1MHz
Coss	-	168	-		
Crss	-	95	-		
Qg *1, 2	-	15.8	-	nC	V_{DS}=15V, V_{GS}=10V, I_D=19A
Qgs *1, 2	-	3	-		
Qgd *1, 2	-	3.6	-		

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(ON)}$ *1, 2	-	9	13.5	ns	V_{DS}=15V, I_D=10A, V_{GS}=10V, R_{GS}=1Ω
tr *1, 2	-	15.8	23.7		
$t_{d(OFF)}$ *1, 2	-	29.4	44.1		
t_f *1, 2	-	8.4	12.6		
$t_{d(ON)}$ *1, 2	-	14.2	21.3	ns	V_{DS}=15V, I_D=10A, V_{GS}=4.5V, R_{GS}=1Ω
tr *1, 2	-	23	34.5		
$t_{d(OFF)}$ *1, 2	-	19	28.5		
t_f *1, 2	-	12.2	18.3		
Rg	-	2.1	-	Ω	f=1MHz
Source-Drain Diode					
I_S *1	-	-	14	A	
I_{SM} *3	-	-	56		
V_{SD} *1	-	0.83	1.2	V	I_S=14A, V_{GS}=0V
trr	-	9.8	-	ns	I_F=10A, dI_F/dt=100A/μs
Qrr	-	3.8	-	nC	

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

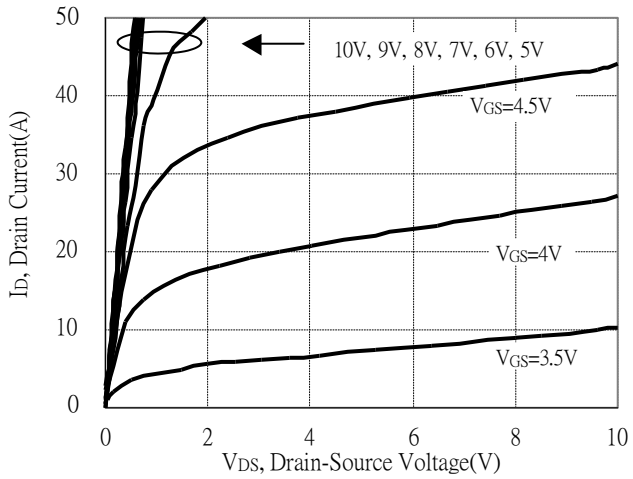
Recommended Soldering Footprint



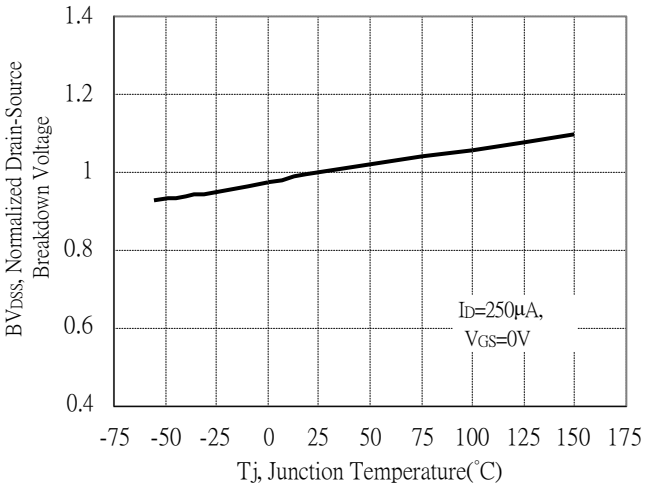
unit : mm

Typical Characteristics

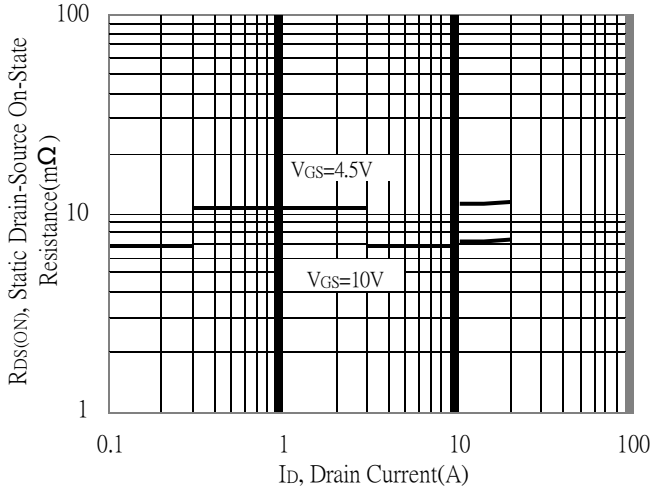
Typical Output Characteristics



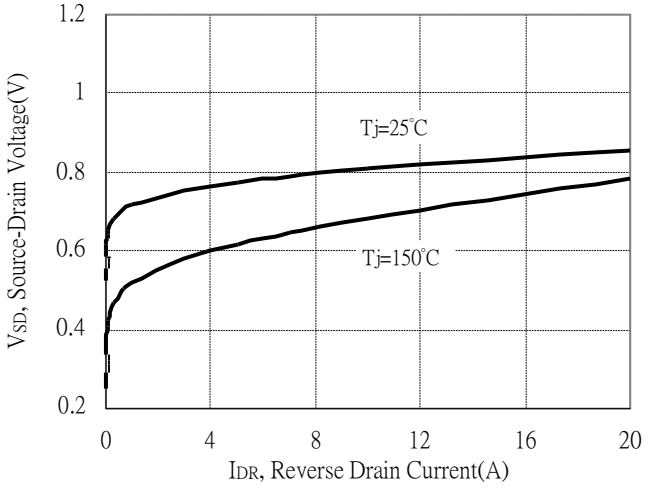
Brekdown Voltage vs Ambient Temperature



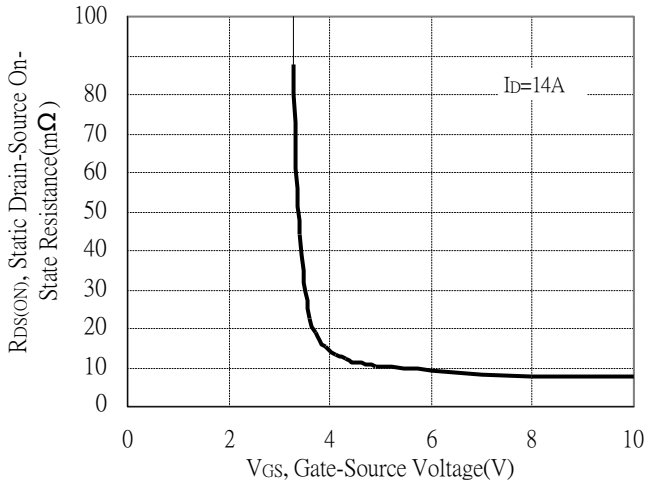
Static Drain-Source On-State resistance vs Drain Current



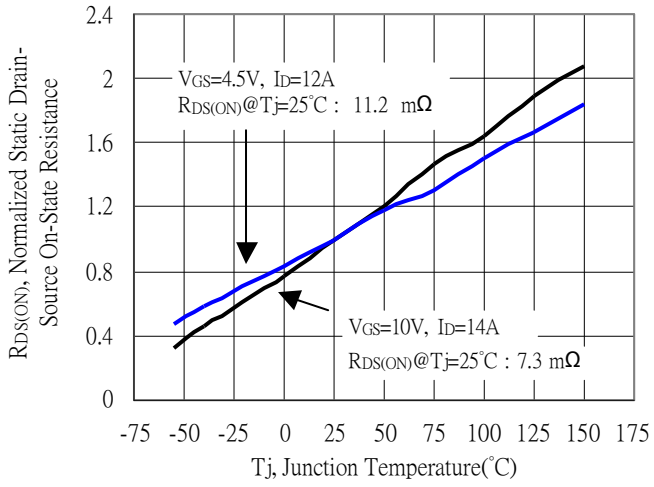
Reverse Drain Current vs Source-Drain Voltage



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

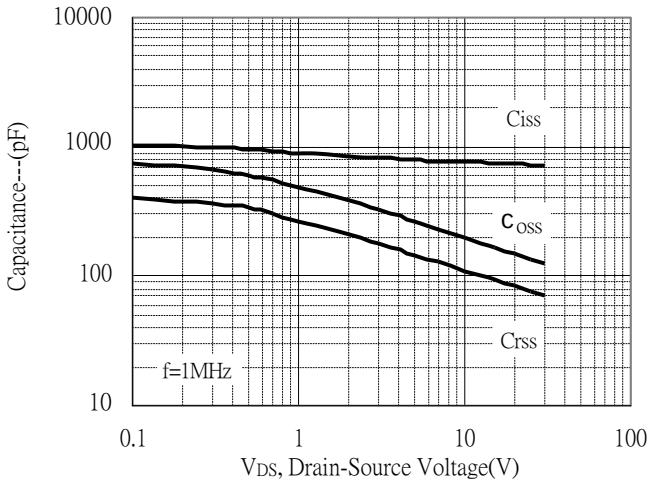


Drain-Source On-State Resistance vs Junction Tempearture

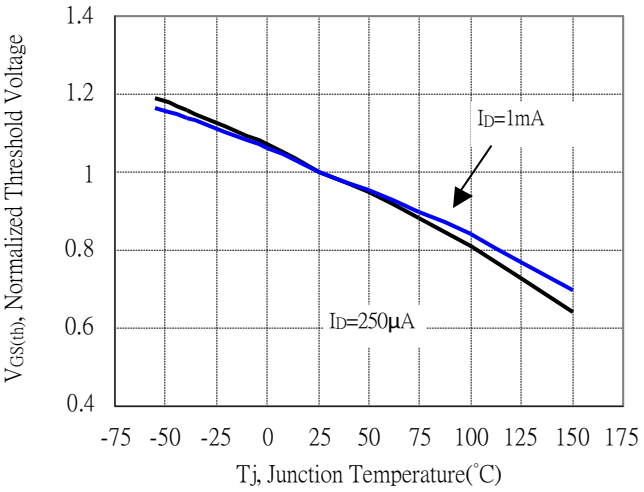


Typical Characteristics(Cont.)

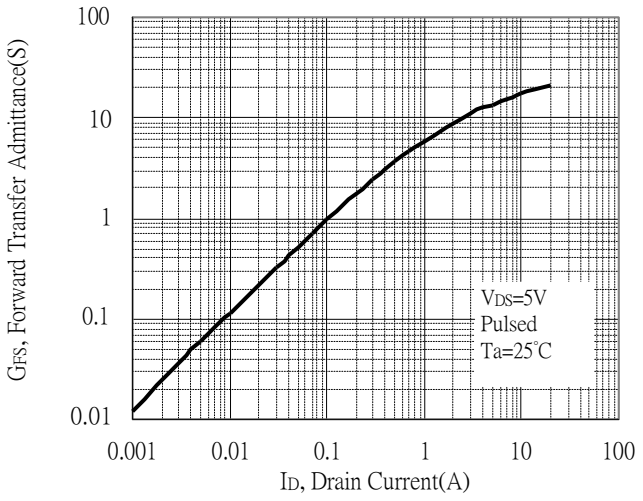
Capacitance vs Drain-to-Source Voltage



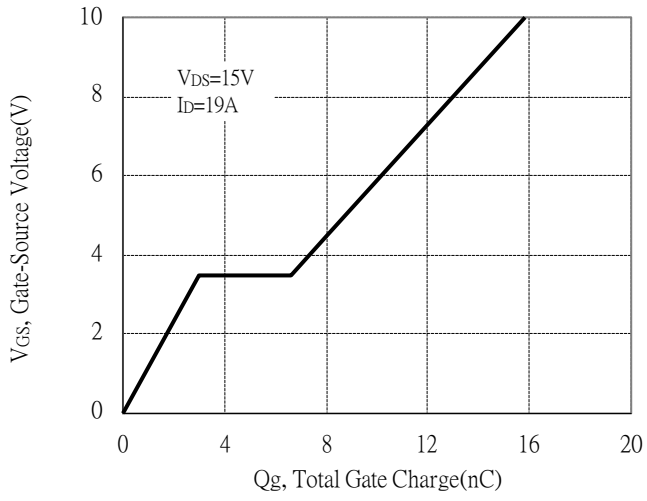
Threshold Voltage vs Junction Tempearture



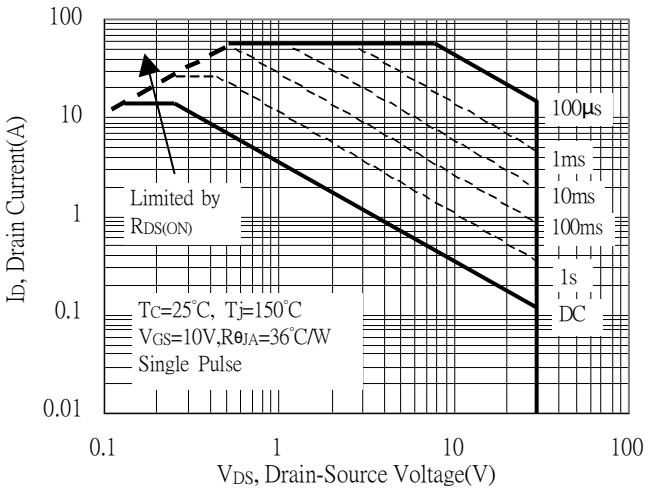
Forward Transfer Admittance vs Drain Current



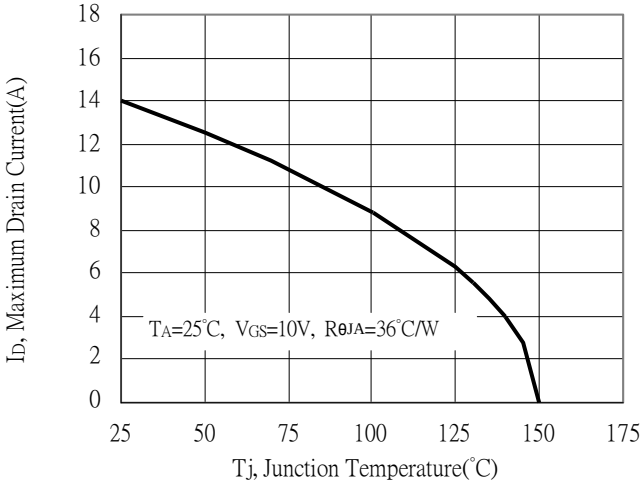
Gate Charge Characteristics



Maximum Safe Operating Area

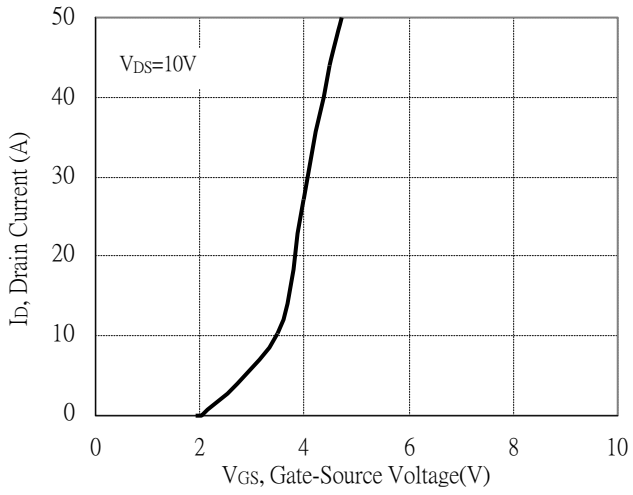


Maximum Drain Current vs Junction Temperature

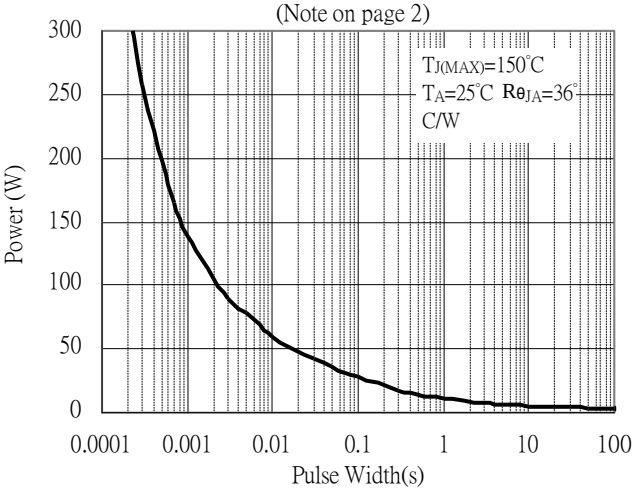


Typical Characteristics(Cont.)

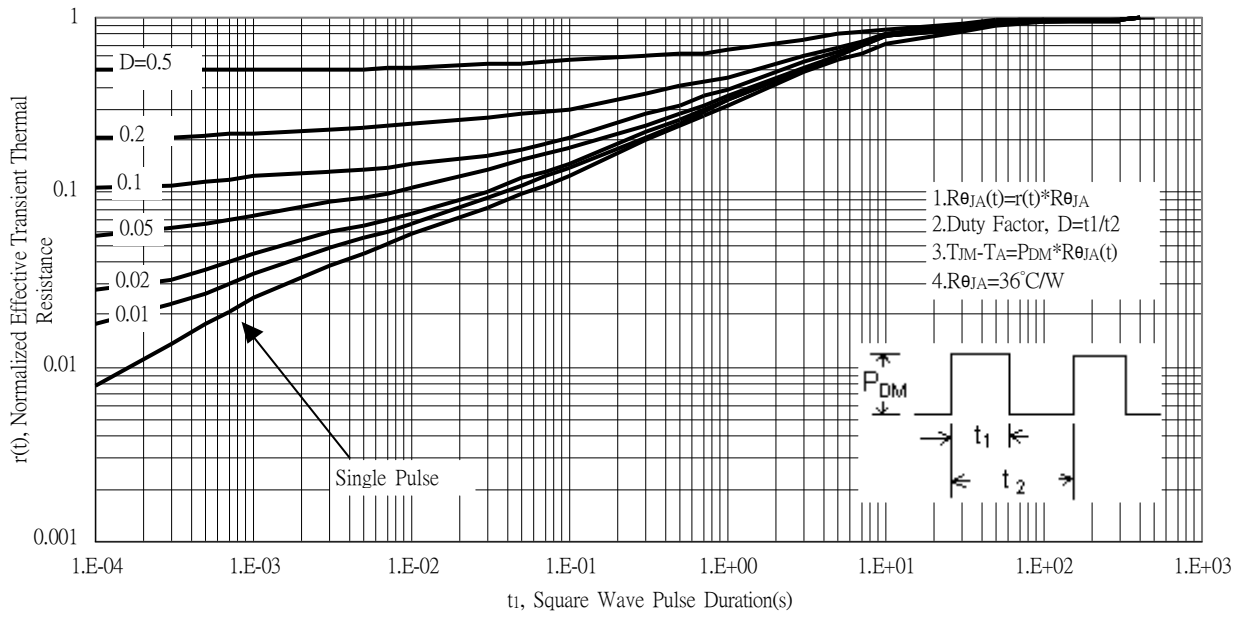
Typical Transfer Characteristics



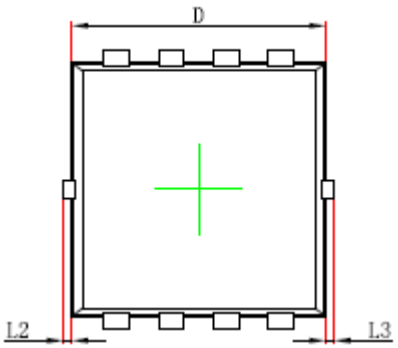
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



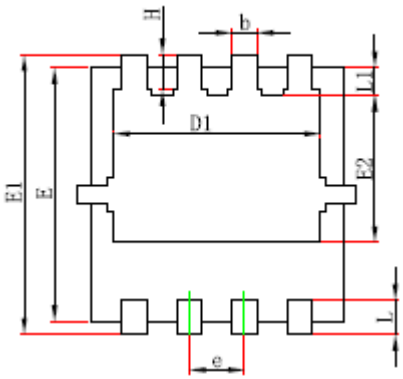
Transient Thermal Response Curves



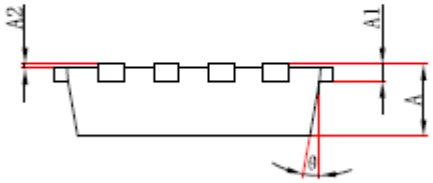
DFN3x3 Dimension



Top View

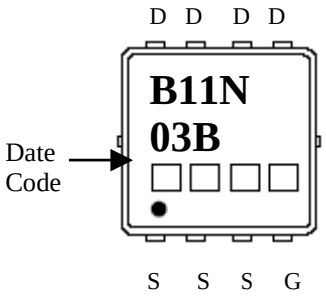


Bottom View



Side View

Marking:



8-Lead DFN3x3 Plastic Package
Code: V8

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.026	0.033	0.650	0.850	b	0.008	0.016	0.200	0.400
A1	0.006 REF		0.152 REF		e	0.022	0.030	0.550	0.750
A2	0.000	0.002	0.000	0.050	L	0.012	0.020	0.300	0.500
D	0.114	0.122	2.900	3.100	L1	0.007	0.019	0.180	0.480
D1	0.091	0.102	2.300	2.600	L2	0.000	0.004	0.000	0.100
E	0.114	0.122	2.900	3.100	L3	0.000	0.004	0.000	0.100
E1	0.124	0.136	3.150	3.450	H	0.012	0.020	0.315	0.515
E2	0.060	0.076	1.535	1.935	θ	9°	13°	9°	13°