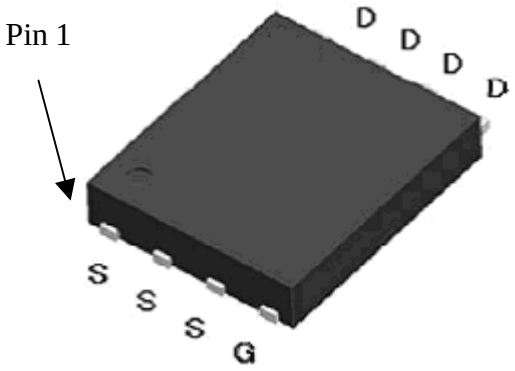
P-Channel Enhancement Mode Power MOSFET

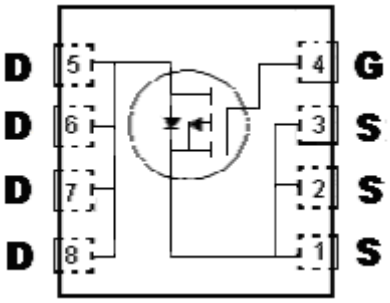
Features:

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



EDFN5×6

BVdss		-30V
I_D@V_{GS}=-10V, T_C=25°C		-90A
I_D@V_{GS}=-10V, T_A=25°C		-22A
$R_{DSON(TYP)}$	V_{GS}=-10V, I_D=-20A	3.2mΩ
	V_{GS}=-4.5V, I_D=-17A	5.1mΩ



G：Gate D：Drain S：Source

Ordering Information

Device	Package	Shipping
KWB5D0P03H8	DFN5×6 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	10s	Steady State	Unit
Drain-Source Voltage		V_{DS}	-30		V
Gate-Source Voltage		V_{GS}	±25		
Continuous Drain Current @ T_C=25°C, V_{GS}=-10V (Note1)		I_D	-90		A
Continuous Drain Current @ T_C=100°C, V_{GS}=-10V (Note1)			-57		
Continuous Drain Current @ T_A=25°C, V_{GS}=-10V (Note2)		I_{DSM}	-22	-14.2	
Continuous Drain Current @ T_A=70°C, V_{GS}=-10V (Note2)			-17.6	-11.4	
Pulsed Drain Current (Note3)		I_{DM}	-200 *1,2		
Avalanche Current		I_{AS}	-30		
Avalanche Energy @ L=0.1mH, I_D=-30A, V_{DD}=-15V		E_{AS}	45		mJ
Total Power Dissipation	T_C=25℃ (Note1)	P_D	83.3		W
	T_C=100℃ (Note1)		33.3		
	T_A=25°C (Note2)	P_{DSM}	5.0	2.1	
	T_A=70°C (Note2)		3.2	1.3	
Operating Junction and Storage Temperature Range		Tj, Tstg	-55~+150		°C

Thermal Data

Parameter		Symbol	Typical	Maximum	Unit
Thermal Resistance, Junction-to-case		$R_{th,j-c}$	1	1.5	°C/W
Thermal Resistance, Junction-to-ambient (Note2)	t≤10s	$R_{th,j-a}$	18	25	°C/W
	Steady State		50	60	

Note : 1.The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

2. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2 oz. copper, in a still air environment with T_A=25°C. The power dissipation P_{DSM} is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

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

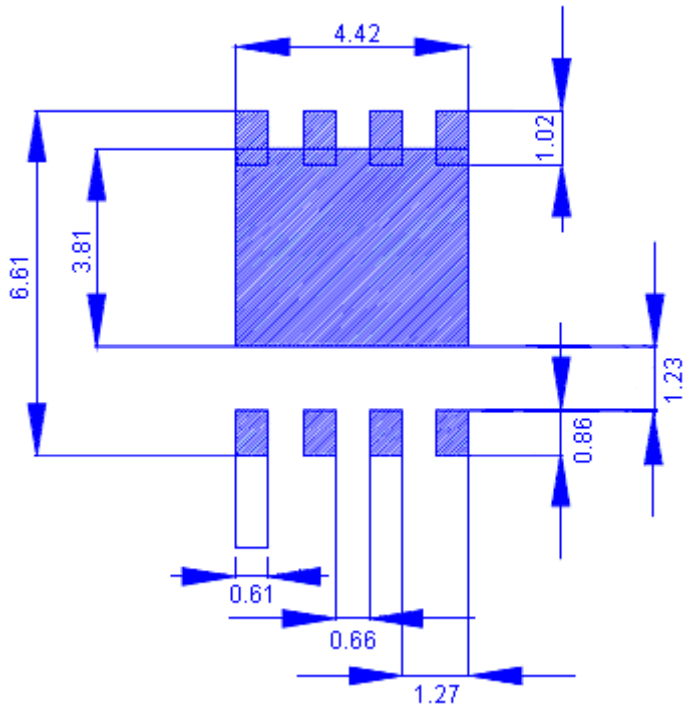
Characteristics (T_C=25°C, unless otherwise specified)

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	V_{DS} = V_{GS}, I_D=-250μA
G_{FS} *1	-	58	-	S	V_{DS} =-5V, I_D=-20A
I_{GSS}	-	-	±100	nA	V_{GS}=±25V
I_{DSS}	-	-	-1	μA	V_{DS} =-24V, V_{GS} =0V
	-	-	-25		V_{DS} =-24V, V_{GS} =0, Tj=125°C
$R_{DS(ON)}$ *1	-	3.2	5.5	mΩ	V_{GS} =-10V, I_D=-20A
	-	5.1	8.5	mΩ	V_{GS} =-4.5V, I_D=-17A

Dynamic *4					
Ciss	-	8120	-	pF	V_{DS}=-15V, V_{GS}=0V, f=1MHz
Coss	-	919	-		
Crss	-	878	-		
Qg *1, 2	-	121	181	nC	V_{DS}=-24V, V_{GS}=-10V, I_D=-20A
Qgs *1, 2	-	18.6	-		
Qgd *1, 2	-	24.5	-		
$t_{d(ON)}$ *1, 2	-	19.4	29	ns	V_{DS}=-15V, I_D=-20A, V_{GS}=-10V, R_G=2.7Ω
tr *1, 2	-	21.6	32		
$t_{d(OFF)}$ *1, 2	-	133	200		
t_f *1, 2	-	49.2	74		
Rg	-	3.8	-	Ω	f=1MHz
Source-Drain Diode					
V_{SD} *1	-	-0.8	-1.2	V	I_S=-20A, V_{GS}=0V
trr	-	26	-	ns	I_F=-10A, dI_F/dt=100A/μs
Qrr	-	17	-	nC	

Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.
*4.Guaranteed by design, not subject to production testing.

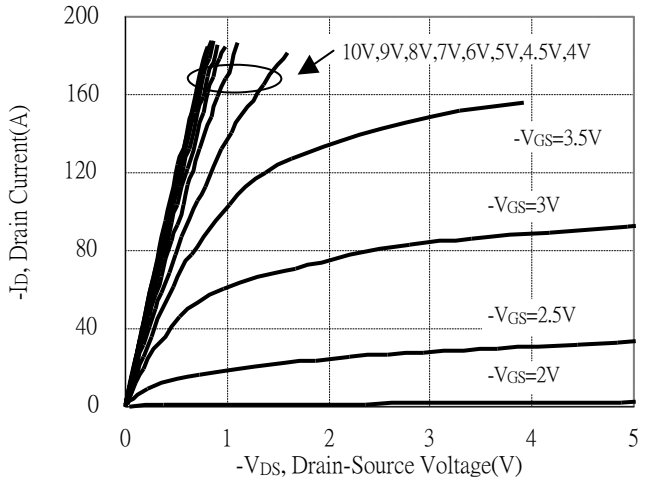
Recommended Soldering Footprint



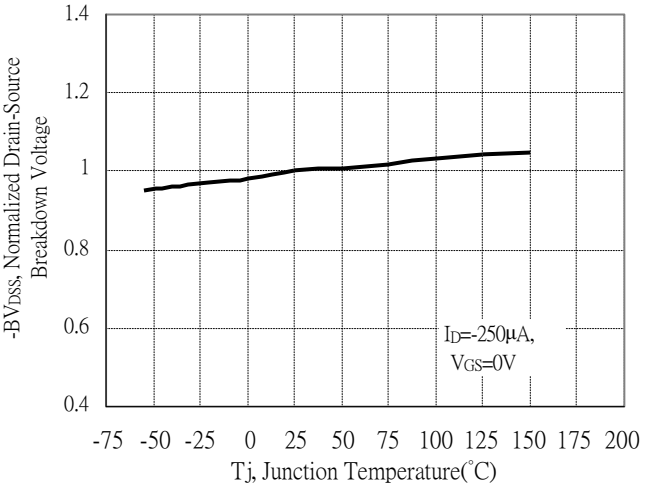
unit : mm

Typical Characteristics

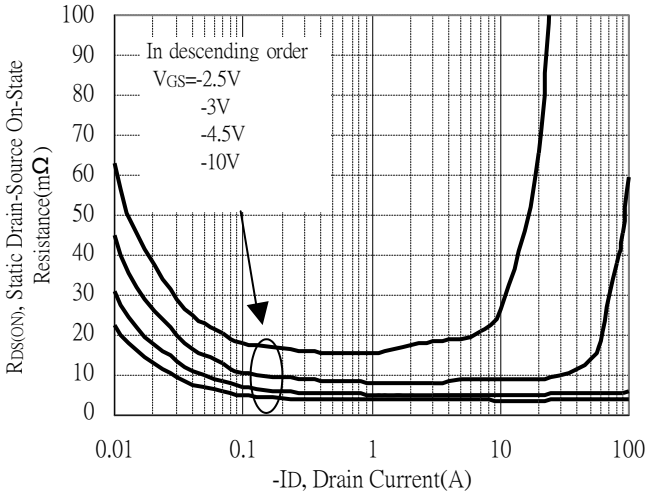
Typical Output Characteristics



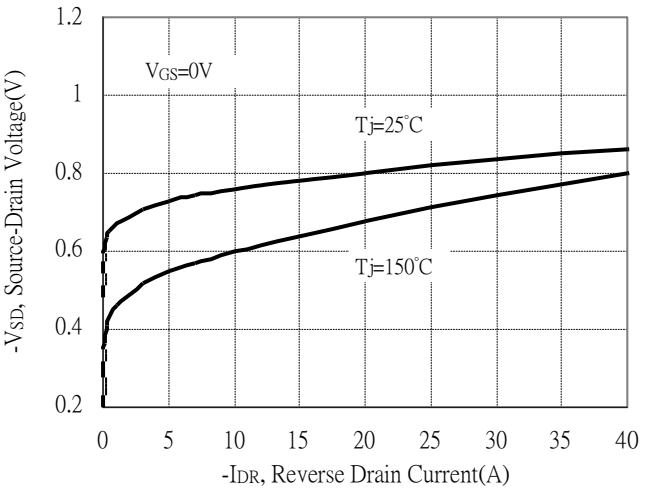
Brekdown Voltage vs Ambient Temperature



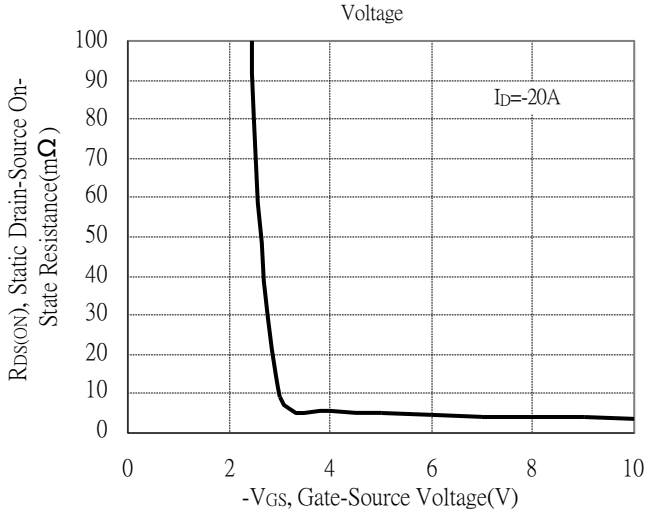
Static Drain-Source On-State resistance vs Drain Current



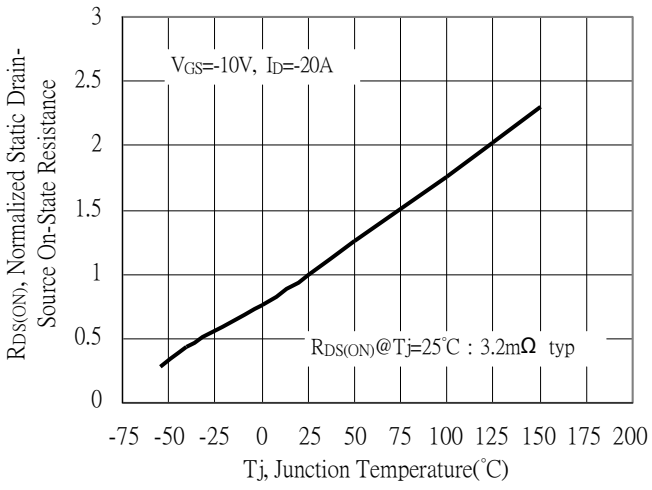
Reverse Drain Current vs Source-Drain Voltage



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

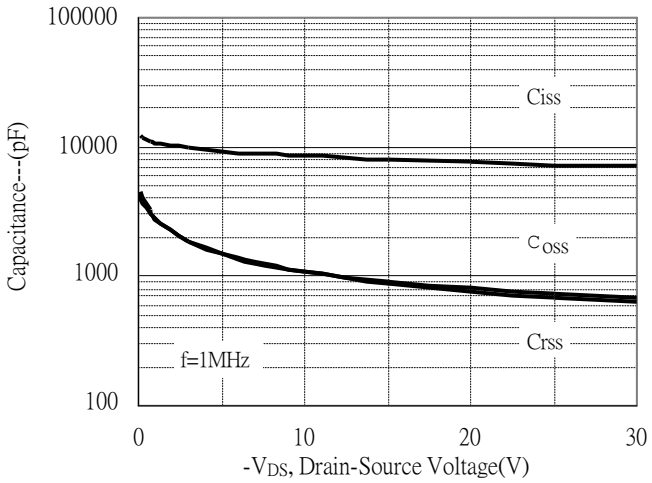


Drain-Source On-State Resistance vs Junction Tempearture

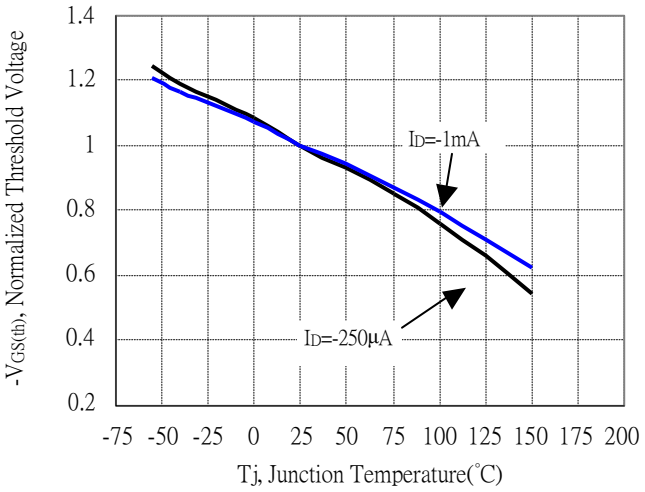


Typical Characteristics(Cont.)

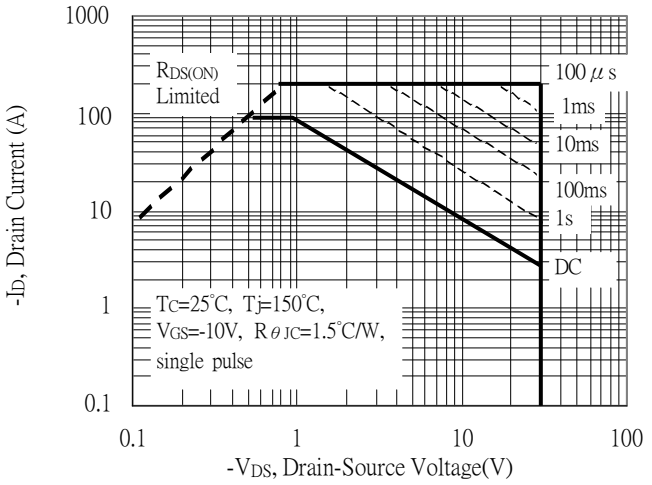
Capacitance vs Drain-to-Source Voltage



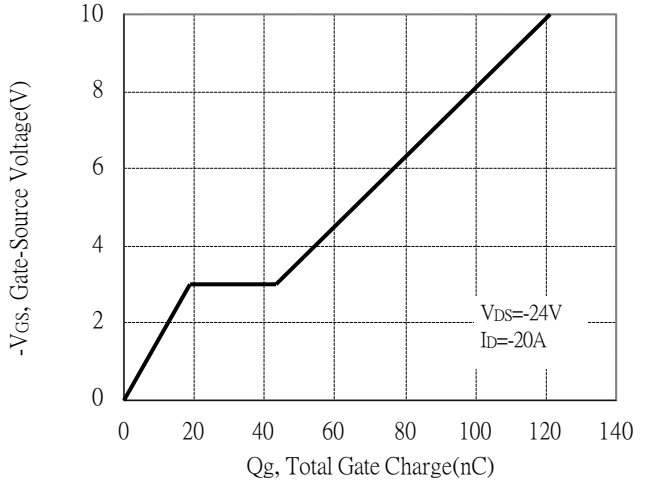
Threshold Voltage vs Junction Tempearture



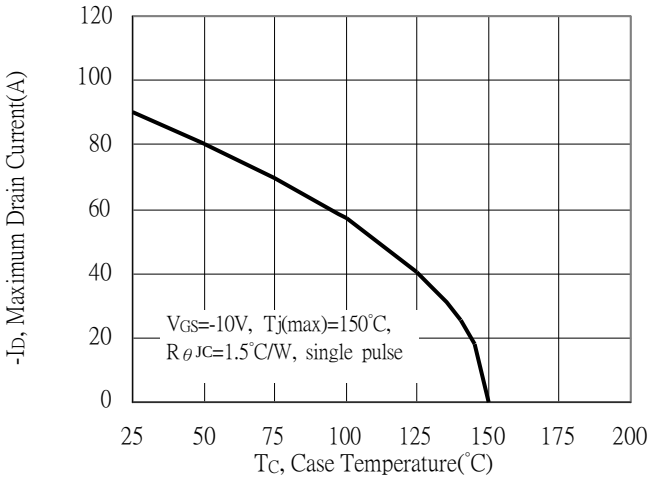
Maximum Safe Operating Area



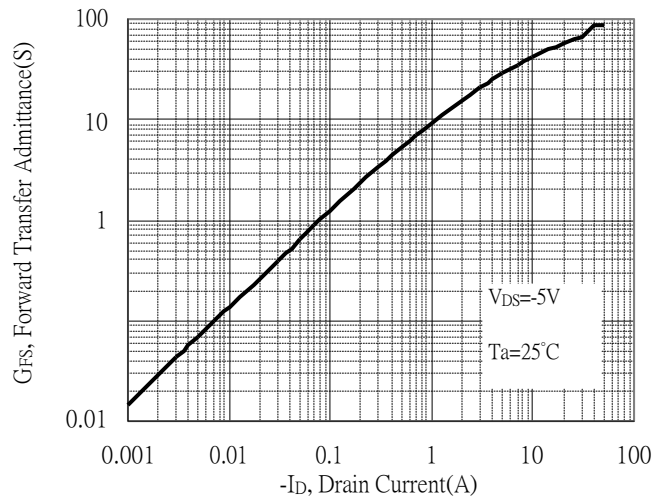
Gate Charge Characteristics



Maximum Drain Current vs Case Temperature

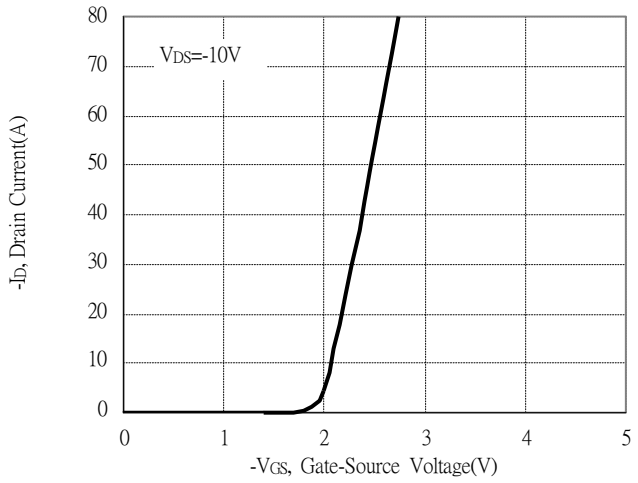


Forward Transfer Admittance vs Drain Current

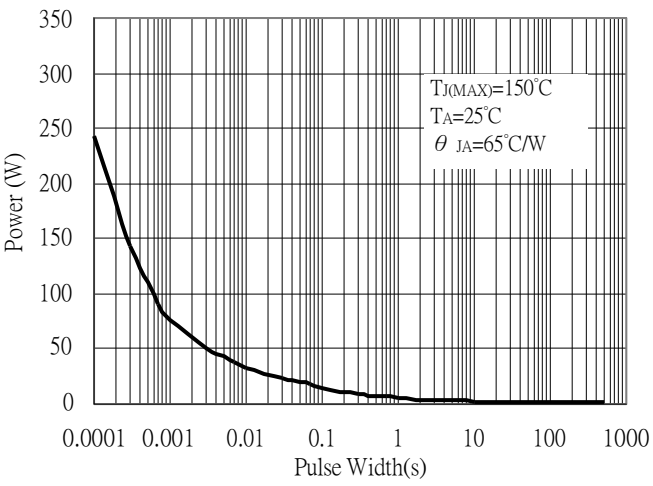


Typical Characteristics(Cont.)

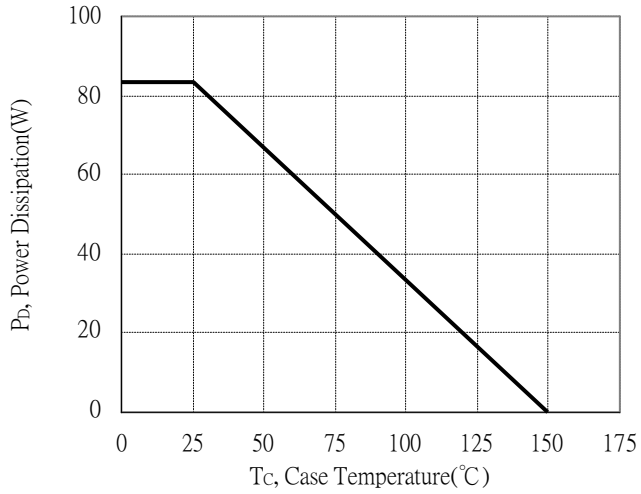
Typical Transfer Characteristics



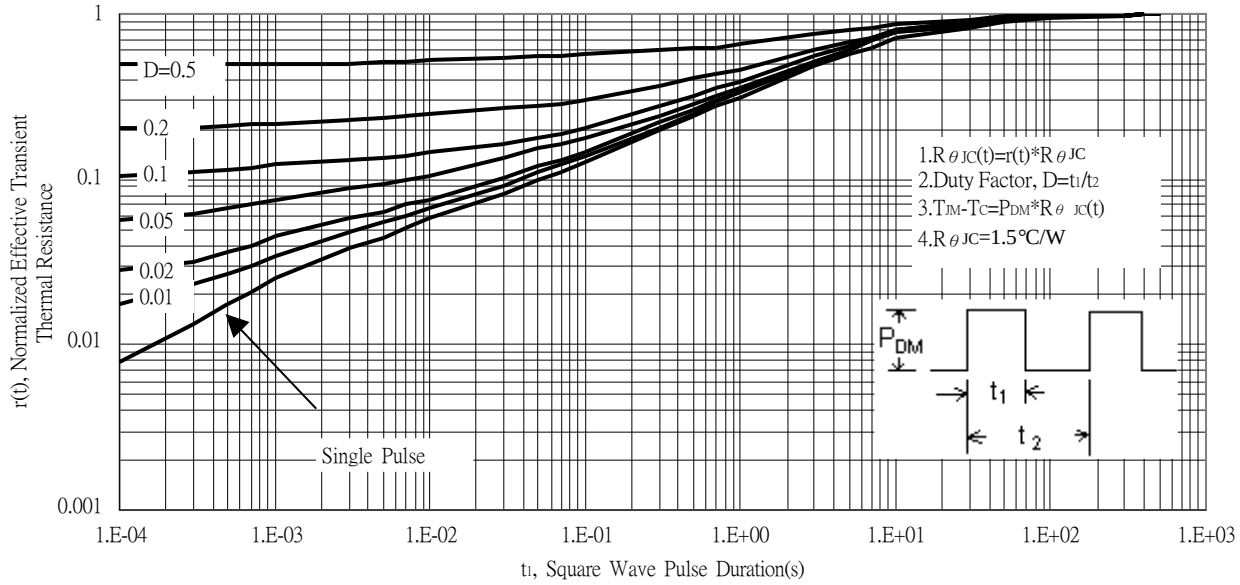
Single Pulse Maximum Power Dissipation



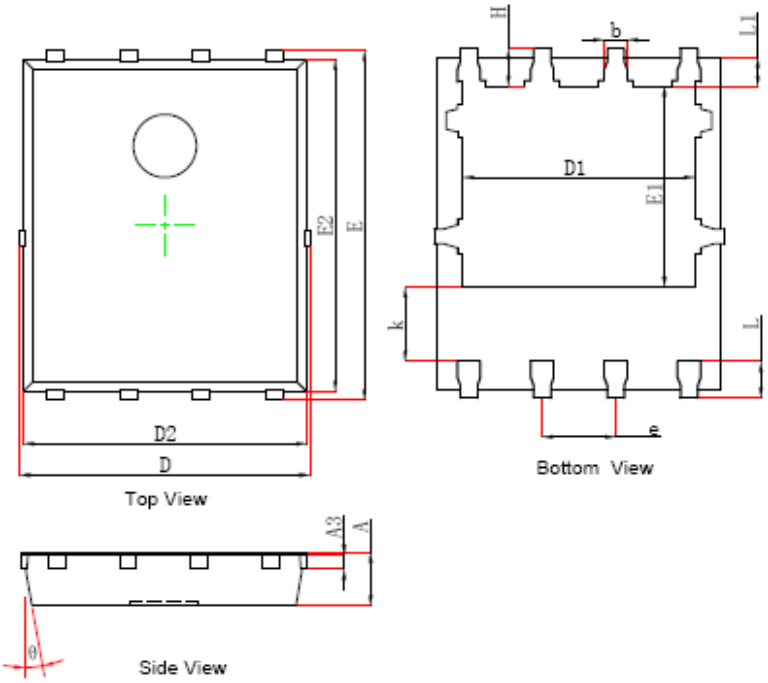
Power Derating Curve



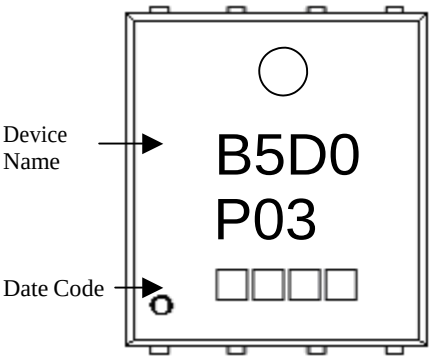
Transient Thermal Response Curves



DFN5x6 Dimension



Marking :



8-Lead DFN5x6 Plastic
Package Code : H8

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039	k	1.190	1.390	0.047	0.055
A3	0.254 REF		0.010 REF		b	0.350	0.450	0.014	0.018
D	4.944	5.096	0.195	0.201	e	1.270 TYP.		0.050 TYP.	
E	5.974	6.126	0.235	0.241	L	0.559	0.711	0.022	0.028
D1	3.910	4.110	0.154	0.162	L1	0.424	0.576	0.017	0.023
E1	3.375	3.575	0.133	0.141	H	0.574	0.726	0.023	0.029
D2	4.824	4.976	0.190	0.196	θ	10°	12°	10°	12°
E2	5.674	5.826	0.223	0.229					