

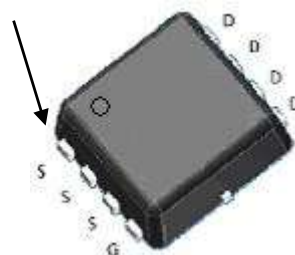
P-Channel Enhancement Mode Power MOSFET

Features:

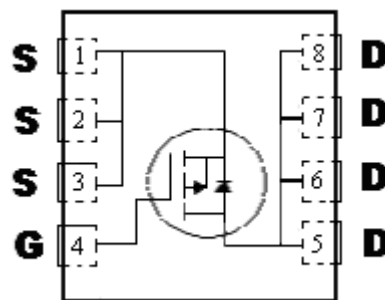
- Simple drive requirement
- Low on-resistance
- Fast switching speed
- Pb-free lead plating and halogen-free package

DFN3x3

Pin 1



BV _{DSS}	-150V
I _D	-5.4A @ V _{GS} =-10V, T _C =25°C
R _{DS(on)(Typ)}	0.52Ω @ V _{GS} =-10V, I _D =-1.4A 0.56Ω @ V _{GS} =-6V, I _D =-1A



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KSPREF1P15A	DFN3x3 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

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

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V _{DS}	-150	V
Gate-Source Voltage		V _{GS}	±30	
Continuous Drain Current @ T _C =25°C, V _{GS} =-10V		I _D	-5.4	A
Continuous Drain Current @ T _C =100°C, V _{GS} =-10V			-3.4	
Continuous Drain Current @ T _A =25°C, V _{GS} =-10V *3			-1.3	
Continuous Drain Current @ T _A =70°C, V _{GS} =-10V *3			-1.0	
Pulsed Drain Current *1, 2		I _{DM}	-16	
Continuous Source-Drain Diode Current	T _C =25°C	I _S	-5.4	mJ
Avalanche Current		I _{AS}	-10	
Avalanche Energy @ L=1mH, I _D =-10A, V _{GS} =-10V *4		E _{AS}	50	
Maximum Power Dissipation	T _C =25°C	P _D	42	W
	T _C =70°C		27	
	T _A =25°C *3		2.1	
	T _A =70°C *3		1.3	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Typ	Maximum	Unit
Thermal Resistance, Junction-to-ambient *3	R _{th,j-a}	50	60	°C/W
Thermal Resistance, Junction-to-case	R _{th,j-c}	2.5	3	

- Note : 1. Pulse width limited by maximum junction temperature.
 2. Duty cycle ≤ 1%.
 3. Surface mounted on 1 in² copper pad of FR-4 board; 135°C/W when mounted on minimum pad of 2 oz. copper.
 4. 100% tested by conditions of L=1mH, V_{GS}=-10V, I_{AS}=-7A, V_{DD}=-25V

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-150	-	-	V	V _{GS} =0V, I _D =-250μA
ΔBV _{DSS} /ΔT _J	-	-106	-	mV/°C	I _D =-250μA
ΔV _{GS(th)} /ΔT _J	-	6	-		
V _{GS(th)}	-2	-	-4	V	V _{DS} =V _{GS} , I _D =-250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±30V, V _{DS} =0V
I _{DSS}	-	-	-1	μA	V _{DS} =-120V, V _{GS} =0V
	-	-	-10		V _{DS} =-120V, V _{GS} =0V, T _J =55°C
R _{DS(on)} *1	-	0.52	0.68	Ω	V _{GS} =-10V, I _D =-1.4A
	-	0.56	0.79		V _{GS} =-6V, I _D =-1A
G _{FS} *1	-	2.8	-	S	V _{DS} =-10V, I _D =-1.4A

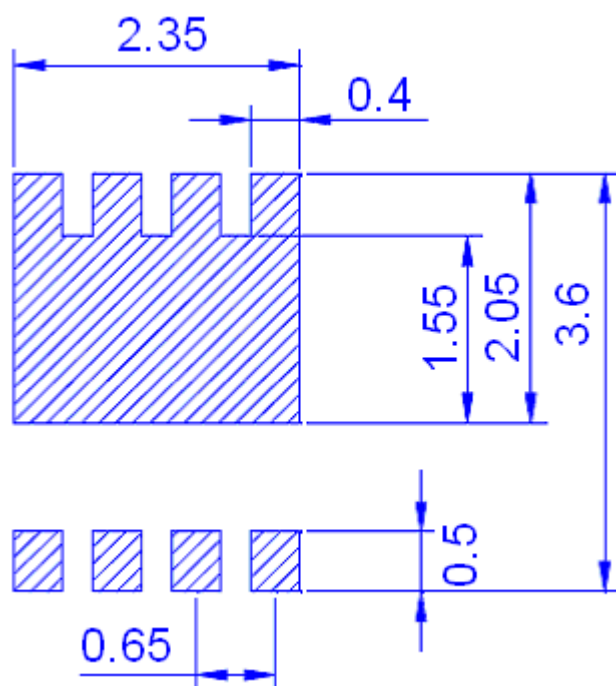
Dynamic					
Qg *1, 2	-	10.5		nC	V _{DS} =-75V, I _D =-5.4A,V _{GS} =-10V
Qgs *1, 2	-	3.1	-		
Qgd *1, 2	-	2.9	-		
td(ON) *1, 2	-	9.8	-	ns	V _{DS} =-75V, I _D =-1A, V _{GS} =-10V, R _G =6Ω
tr *1, 2	-	16.6	-		
td(OFF) *1, 2	-	31.4	-		
tf *1, 2	-	28.4	-		
Ciss	-	571	-	pF	V _{DS} =-30V, V _{GS} =0V, f=1MHz
Coss	-	29	-		
Crss	-	17	-		
Source-Drain Diode					
Is *1	-	-	-5.4	A	T _C =25℃
ISM *3	-	-	-16		
VSD *1	-	-0.77	-1.2	V	IF=-1A, VGS=0V
trr	-	28	-	ns	IF=-1A, dIF/dt=100A/μs
Qrr	-	33	-	nC	

Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

*2.Independent of operating temperature

*3.Pulse width limited by maximum junction temperature.

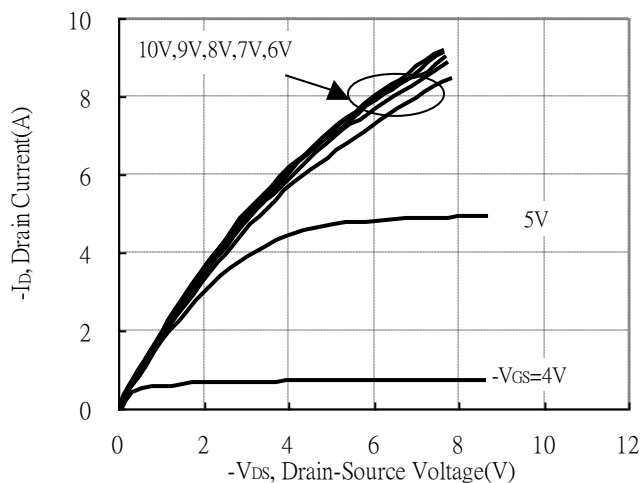
Recommended Soldering Footprint



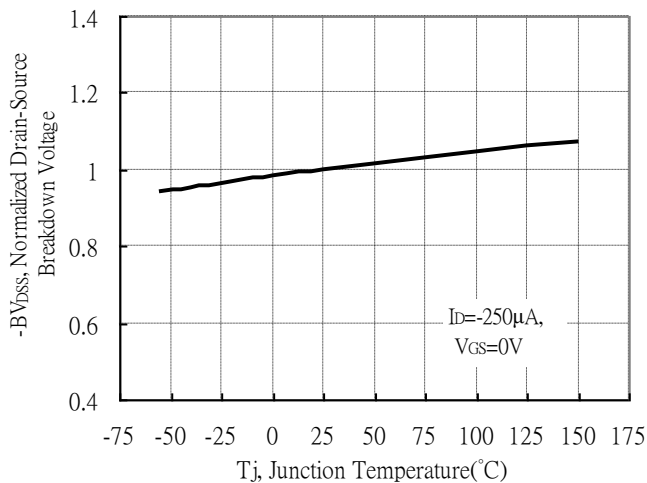
unit : mm

Typical Characteristics

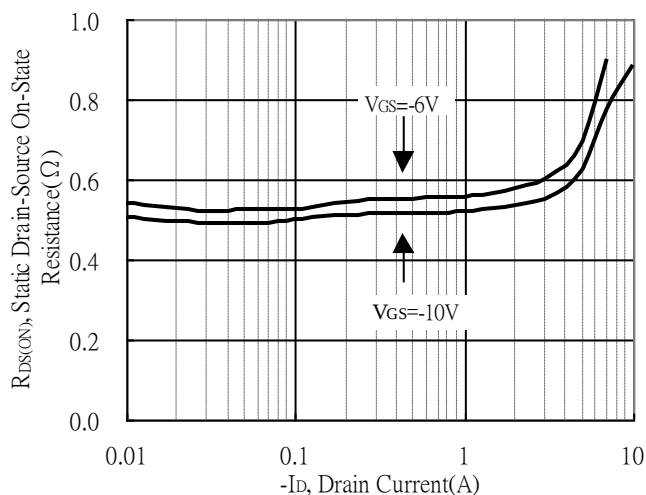
Typical Output Characteristics



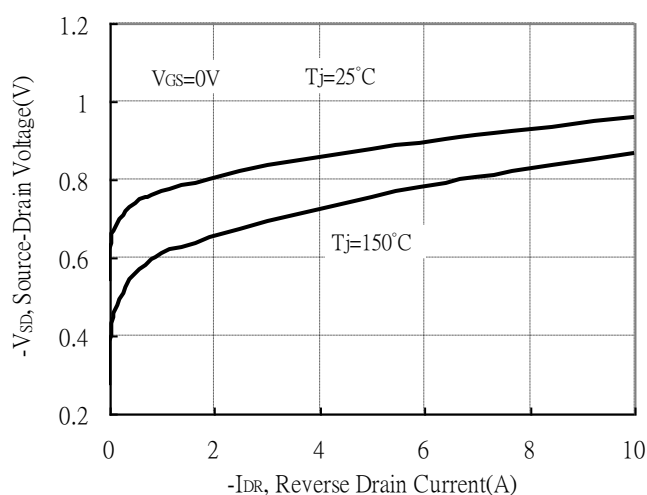
Breakdown Voltage vs Ambient Temperature



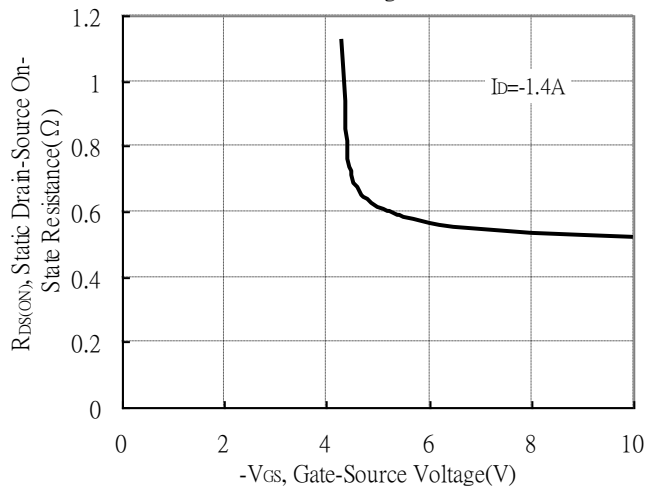
Static Drain-Source On-State resistance vs Drain Current



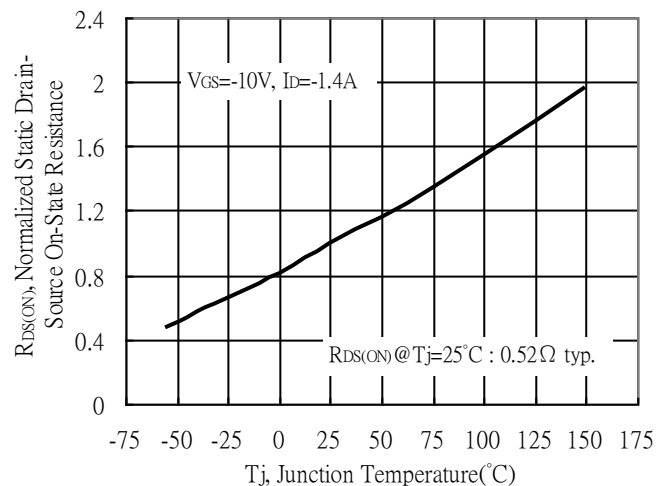
Reverse Drain Current vs Source-Drain Voltage



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

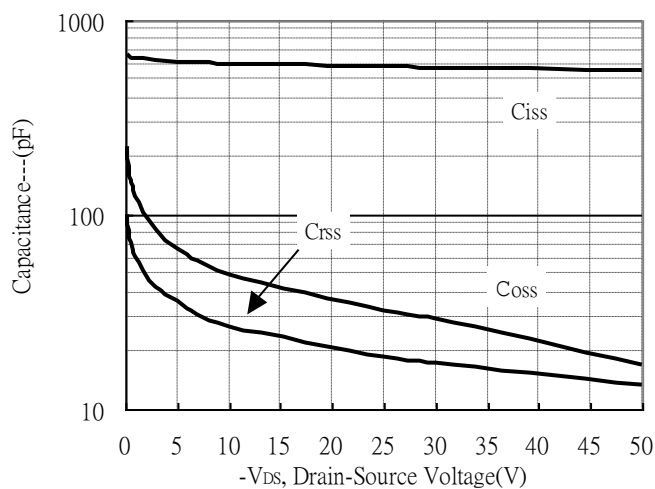


Drain-Source On-State Resistance vs Junction Temperature

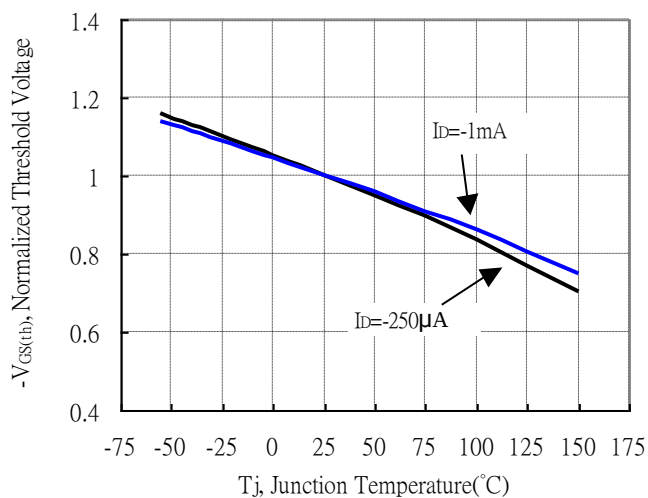


Typical Characteristics(Cont.)

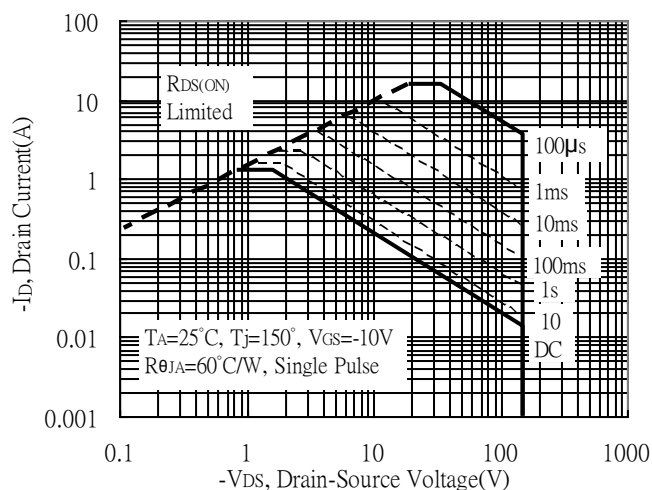
Capacitance vs Drain-to-Source Voltage



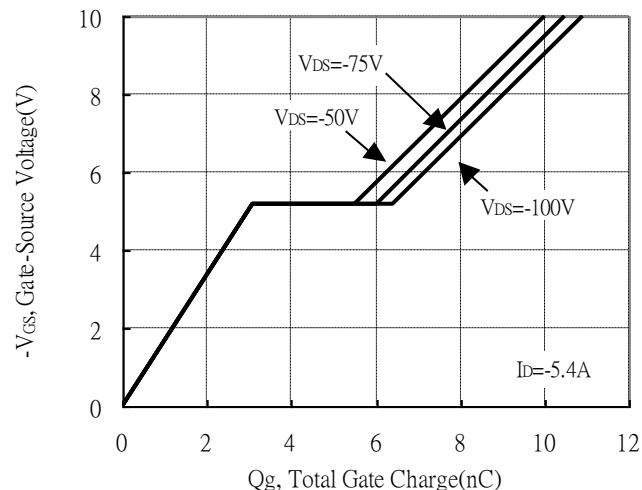
Threshold Voltage vs Junction Temperature



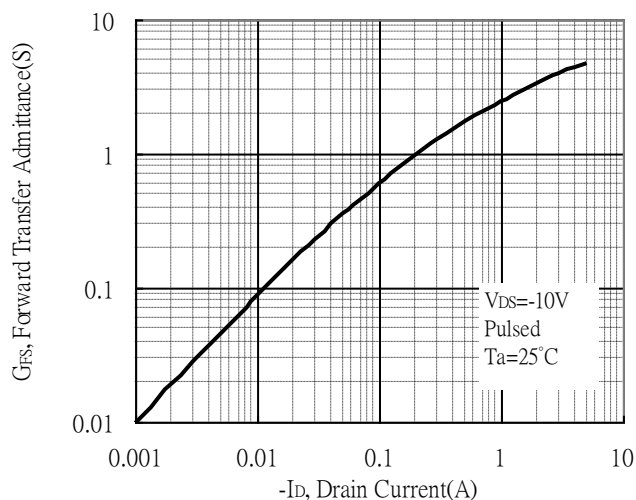
Maximum Safe Operating Area



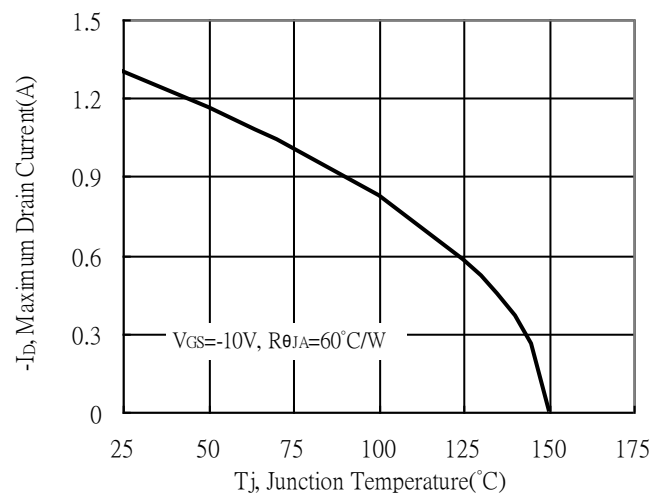
Gate Charge Characteristics



Forward Transfer Admittance vs Drain Current

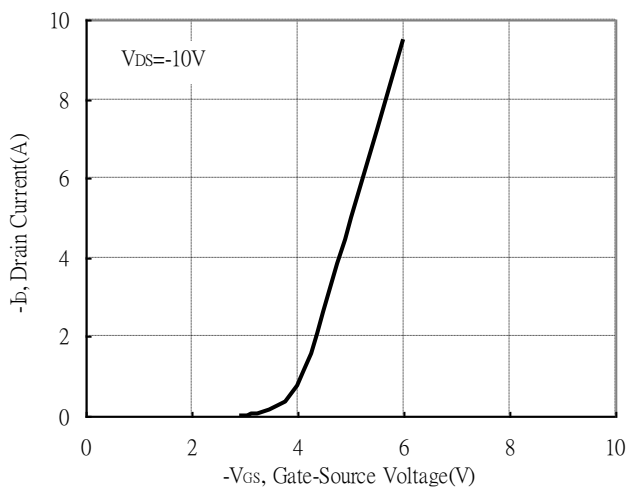


Maximum Drain Current vs Junction Temperature

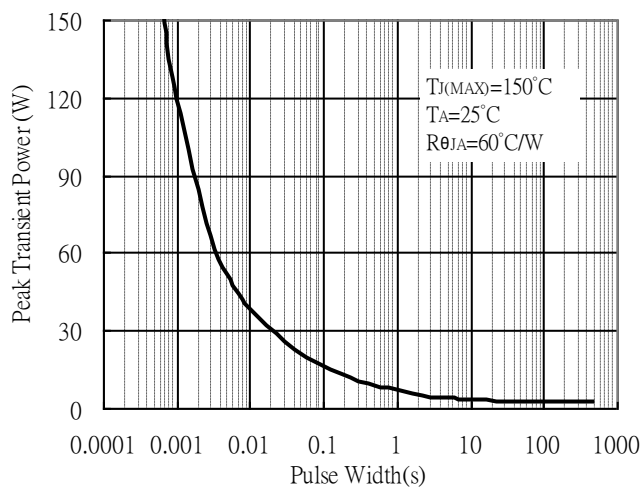


Typical Characteristics(Cont.)

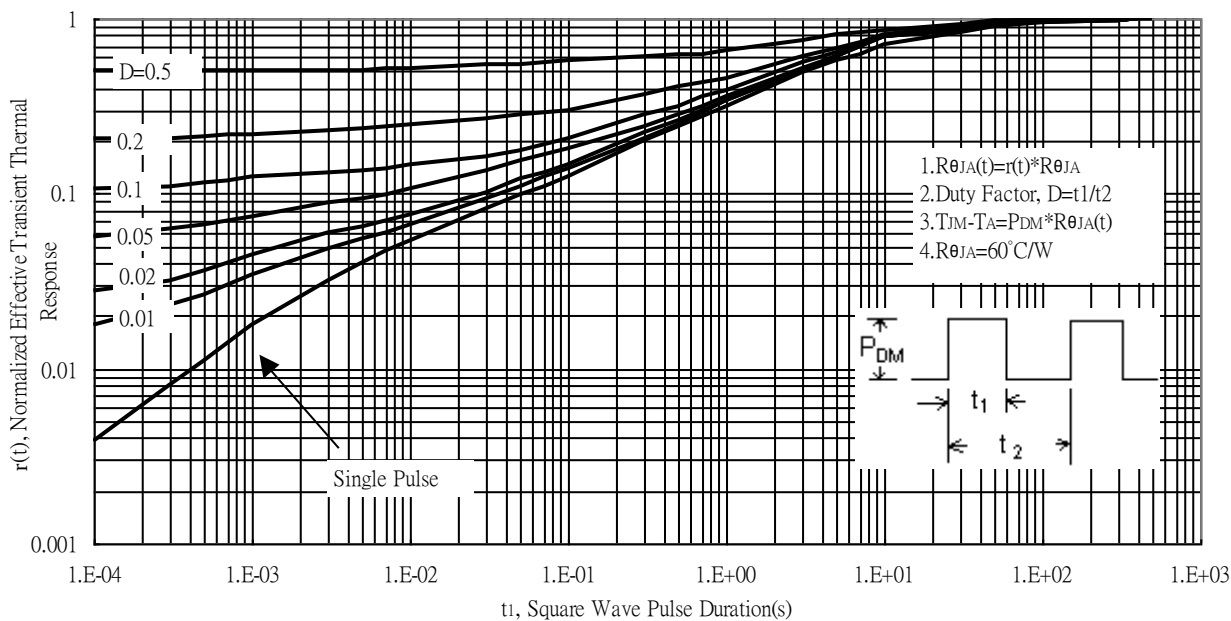
Typical Transfer Characteristics



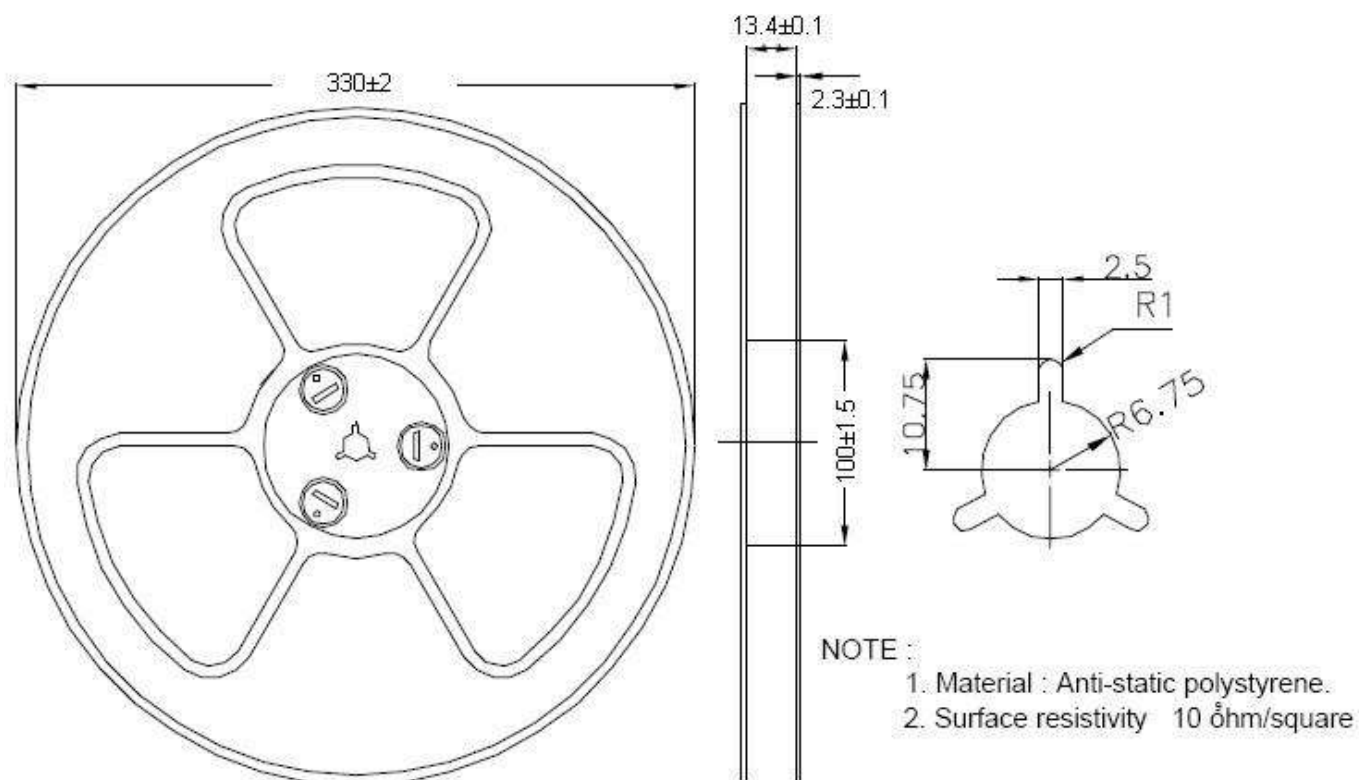
Single Pulse Maximum Power Dissipation



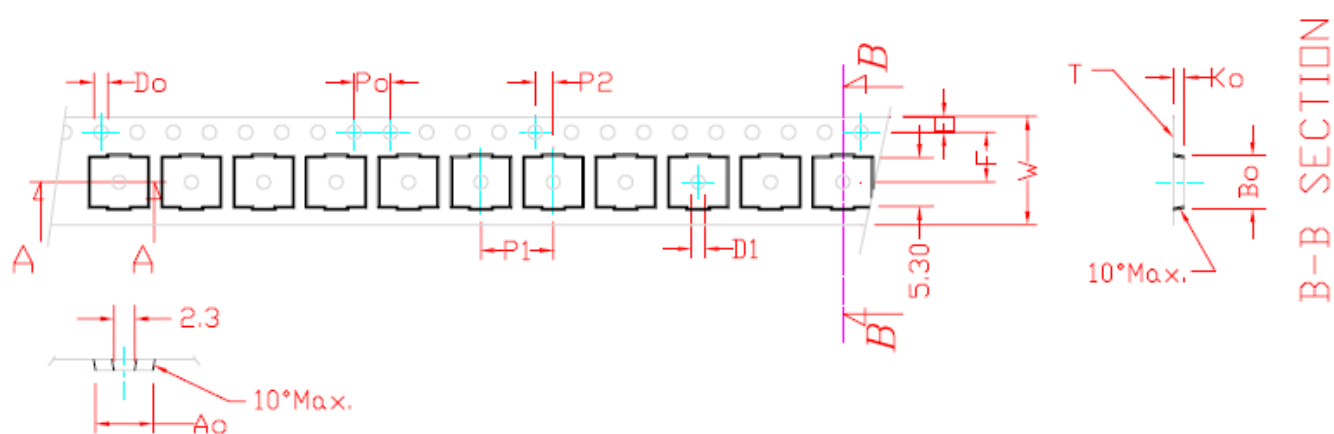
Transient Thermal Response Curves



Reel Dimension



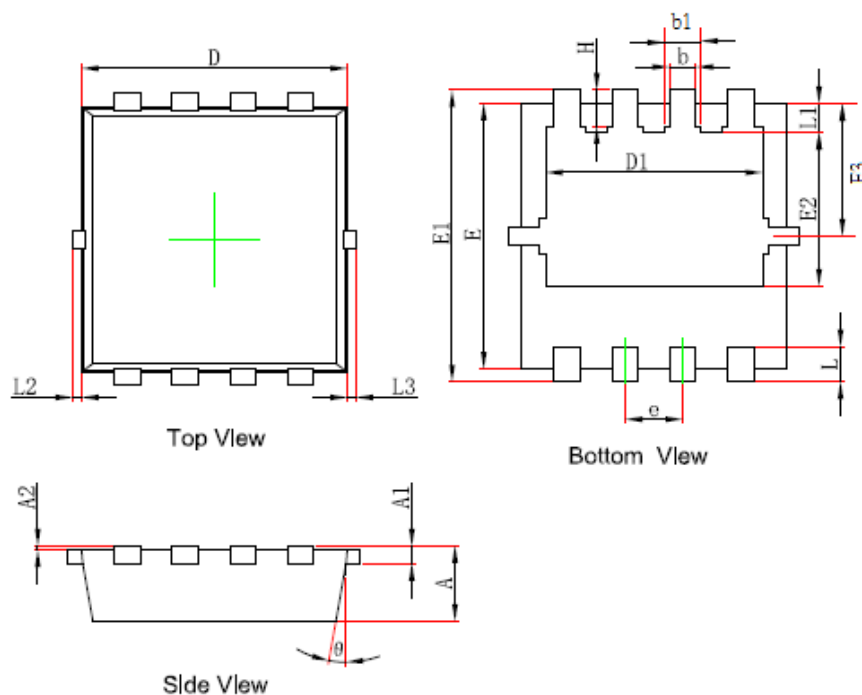
Carrier Tape Dimension



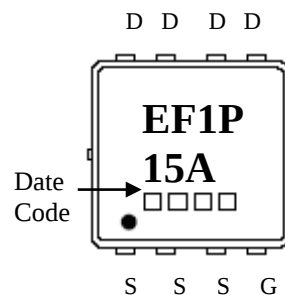
A-A SECTION

symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	6.33±0.1	5.78±0.1	1.18±0.1	4.00±0.1	8.0±0.10	2.0±0.05	0.29±0.02
symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.5±0.05	1.50±0.10	1.5±0.25	12.0 ^{+0.3} _{-0.1}	40.0±0.2	

DFN3×3 Dimension



Marking:



8-Lead DFN3×3 Plastic Package

*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.605	0.850	0.026	0.033	b	0.200	0.400	0.008	0.016
A1	0.152	REF	0.006	REF	b1	0.500	REF	0.020	REF
A2	0.000	0.050	0.000	0.002	e	0.550	0.750	0.022	0.030
D	2.900	3.100	0.114	0.122	L	0.300	0.500	0.012	0.020
D1	2.300	2.600	0.091	0.102	L1	0.180	0.480	0.007	0.019
E	2.900	3.100	0.114	0.122	L2	0.000	0.100	0.000	0.004
E1	3.150	3.450	0.124	0.136	L3	0.000	0.100	0.000	0.004
E2	1.535	1.935	0.060	0.076	H	0.315	0.515	0.012	0.020
E3	1.500	REF	0.059	REF	θ	9°	13°	9°	13°