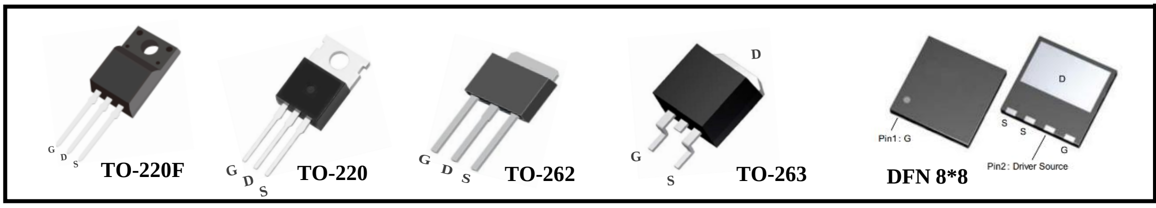
MPSA65M260,MPSP65M260,MPSC65M260,
MPSH65M260,MPSY65M260

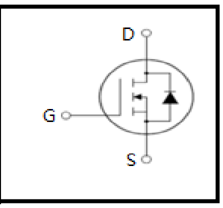
FEATURES

- BV_{DSS}=650V, I_D=15A
- $R_{DS(on)}$:0.26Ω(Max)@V_{GS}=10V
- Very low FOM $R_{DS(on)} \times Q_g$
- 100% avalanche tested
- RoHS compliant

APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)





Device Marking and Package Information

Ordering code	Package	Marking
MPSA65M260	TO-220F	MP65M260
MPSP65M260	TO-220	MP65M260
MPSH65M260	TO-262	MP65M260
MPSC65M260	TO-263	MP65M260
MPSY65M260	DFN 8*8	MP65M260

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter	Symbol	Value		Unit
		TO-220F	TO-220, TO-262, TO-263, DFN 8*8	
Drain-Source Voltage (V_{GS} = 0V)	V_{DSS}	650		V
Continuous Drain Current	I_D	15		A
Pulsed Drain Current (note1)	I_{DM}	45		A
Gate-Source Voltage	V_{GSS}	±30		V
Single Pulse Avalanche Energy (note2)	E_{AS}	290		mJ
AvalancheCurrent (note1)	I_{AR}	2.4		A
Repetitive Avalanche Energy (note1)	E_{AR}	0.44		mJ
MOSFET dv/dt ruggedness, V_{DS}=0…400 V	dv/dt	50		V/ns
Reverse diode dv/dt, V_{DS}=0…400 V, $I_{SD} \leq I_D$	dv/dt	50		V/ns
Power Dissipation (T_C = 25ºC)	P_D	31	100	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150		ºC

Thermal Resistance

Parameter	Symbol	Value		Unit
		TO-220F	TO-220, TO-262, TO-263, DFN 8*8	
Thermal Resistance, Junction-to-Case	R_{thJC}	4	1.6	K/W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	80	62	

Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	650	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 650V, V_{GS} = 0V, T_J = 25ºC	--	--	1	μA
		V_{DS} = 650V, V_{GS} = 0V, T_J = 150ºC	--	--	100	
Gate-Source Leakage	I_{GSS}	V_{GS} = ±30V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 0.25mA	2.0	--	4.0	V
Drain-Source On-Resistance (Note3)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 7.5A	--	0.23	0.26	Ω
Gate Resistance	R_G	f = 1.0MHz, open drain	--	12	--	Ω
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 100V, f = 1.0MHz	--	1170	--	pF
Output Capacitance	C_{oss}		--	51	--	
Reverse Transfer Capacitance	C_{rss}		--	7	--	
Total Gate Charge	Q_g	V_{DD} = 400V, I_D = 15A, V_{GS} = 10V	--	27	--	nC
Gate-Source Charge	Q_{gs}		--	5.5	--	
Gate-Drain Charge	Q_{gd}		--	10.5	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 400V, I_D = 15A, V_{GS} = 10V, R_G = 25Ω	--	25	--	ns
Turn-on Rise Time	t_r		--	65	--	
Turn-off Delay Time	$t_{d(off)}$		--	105	--	
Turn-off Fall Time	t_f		--	50	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	15	A
Pulsed Diode Forward Current	I_{SM}		--	--	45	
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 15A, V_{GS} = 0V	--	0.9	1.2	V
Reverse Recovery Time	t_{rr}	V_R = 400V, I_F = 15A, di_F/dt = 100A/μs	--	410	--	ns
Reverse Recovery Charge	Q_{rr}		--	4	--	μC
Peak Reverse Recovery Current	I_{rrm}		--	20	--	A

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_{AS} = 2.4A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

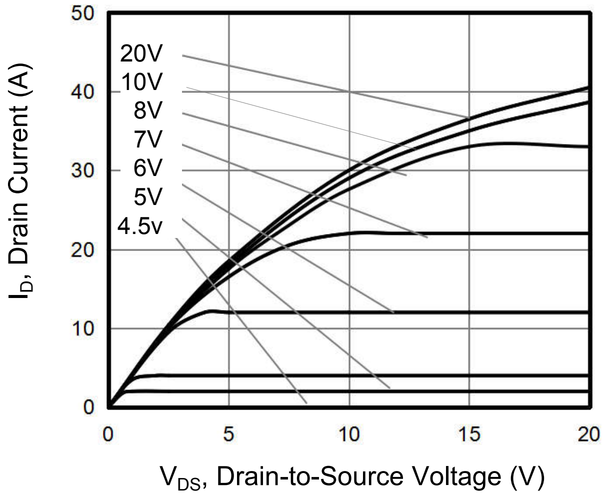


Figure 2. Transfer Characteristics

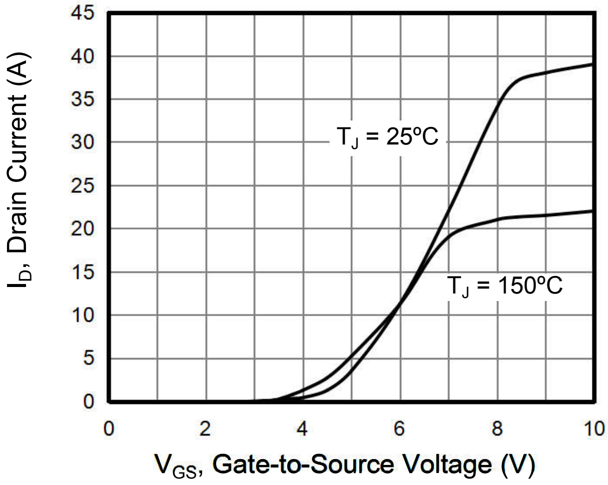


Figure 3. On-Resistance vs. Drain Current

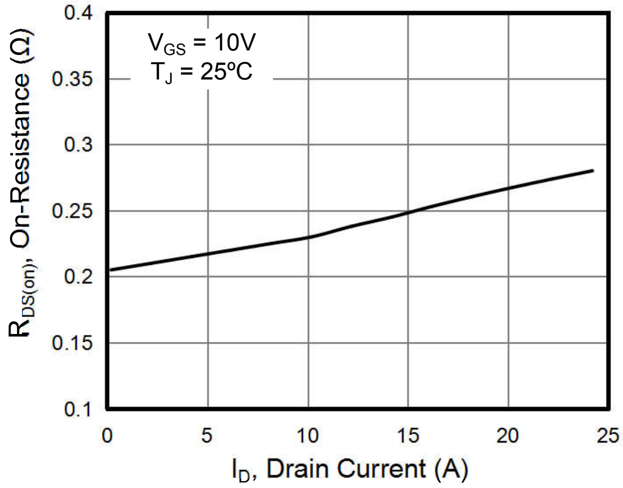


Figure 4. Capacitance

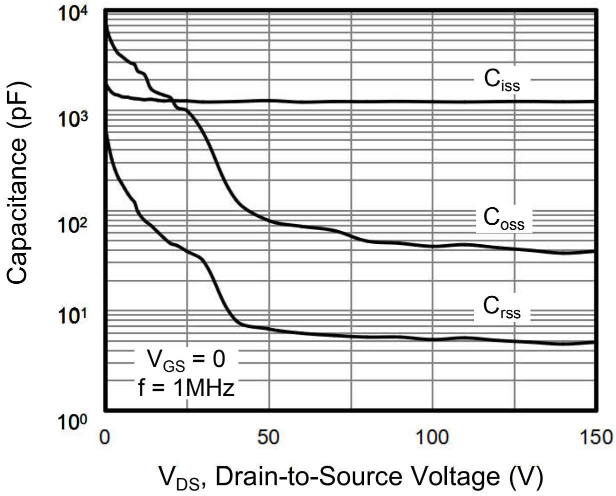


Figure 5. Gate Charge

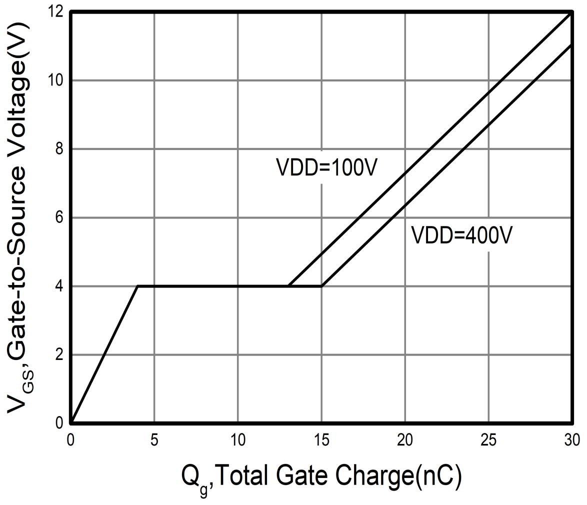
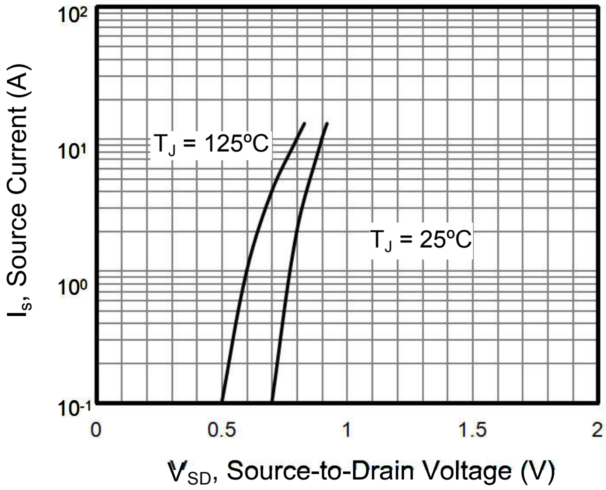


Figure 6. Body Diode Forward Voltage



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. On-Resistance vs. Junction Temperature

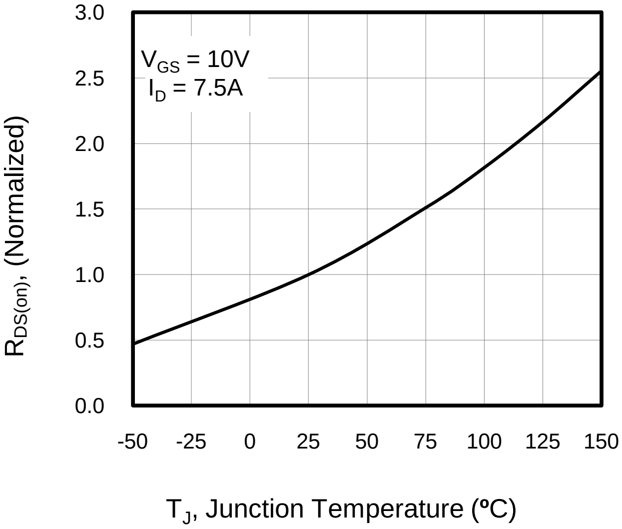


Figure 8. Breakdown voltage vs. Junction Temperature

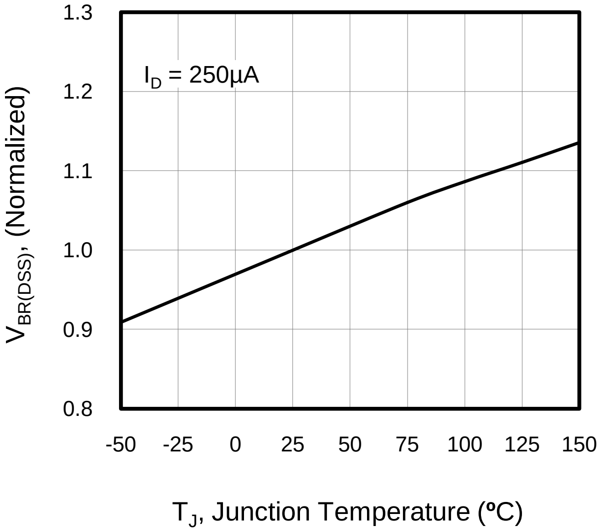


Figure 9. Transient Thermal Impedance TO-220F

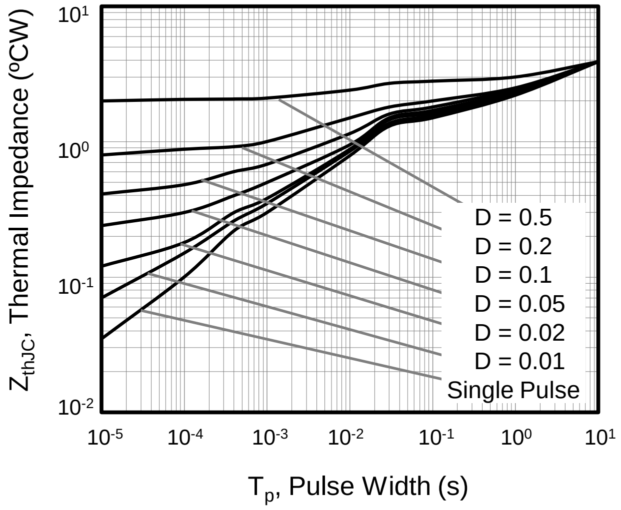


Figure 10. Transient Thermal Impedance TO-220/TO-263/TO-262/DFN 8*8

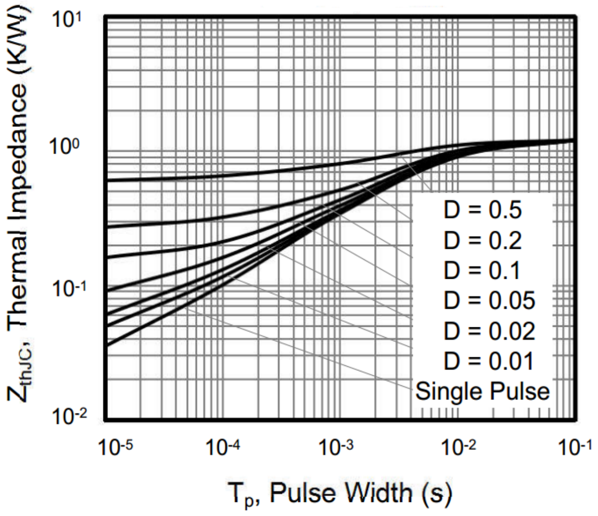


Figure A：Gate Charge Test Circuit and Waveform

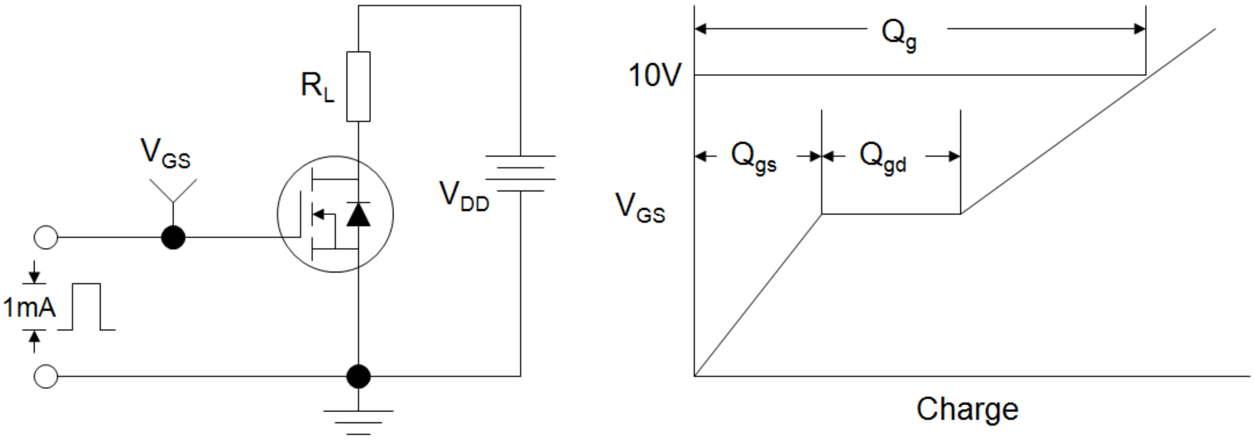


Figure B：Resistive Switching Test Circuit and Waveform

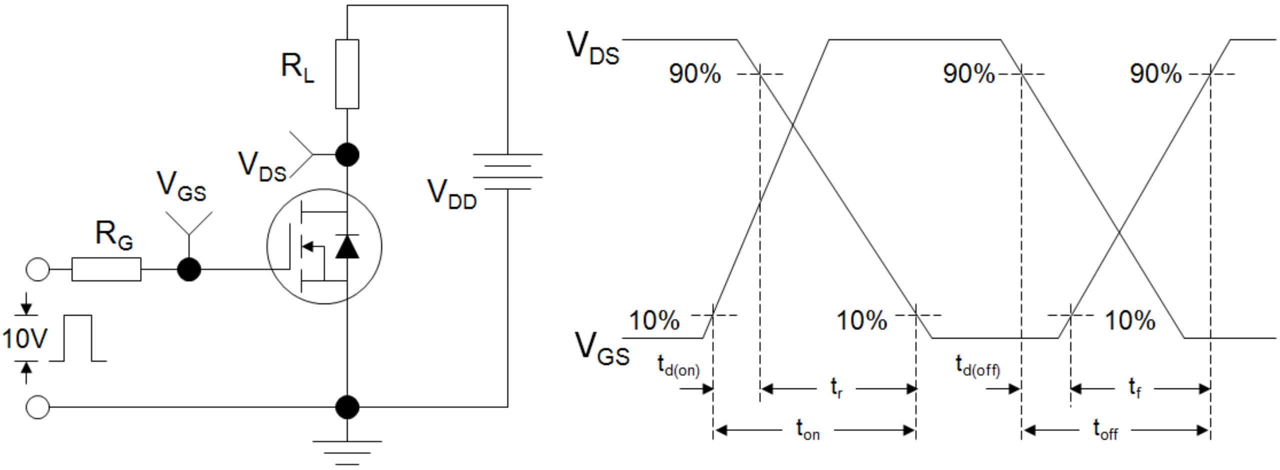
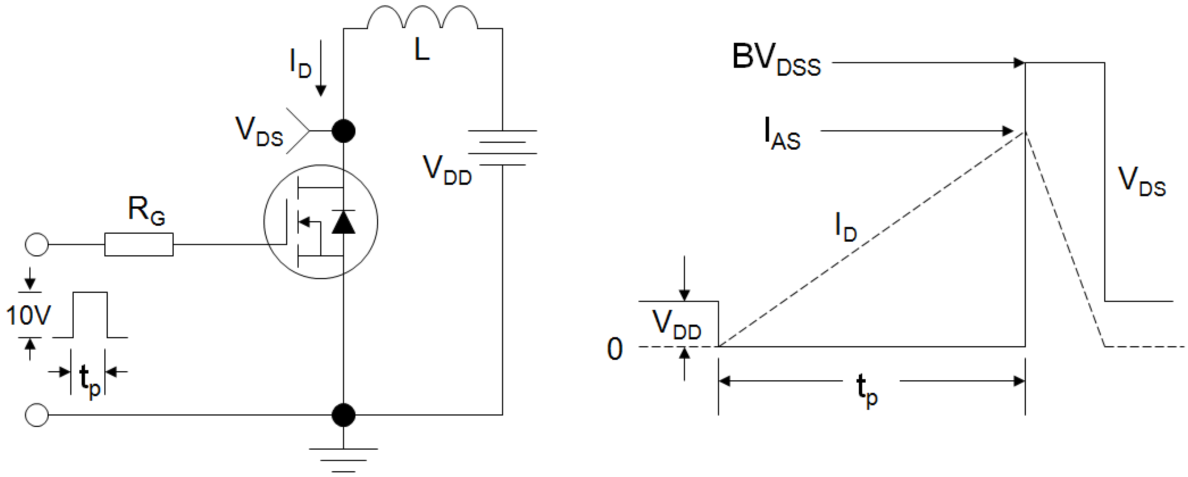
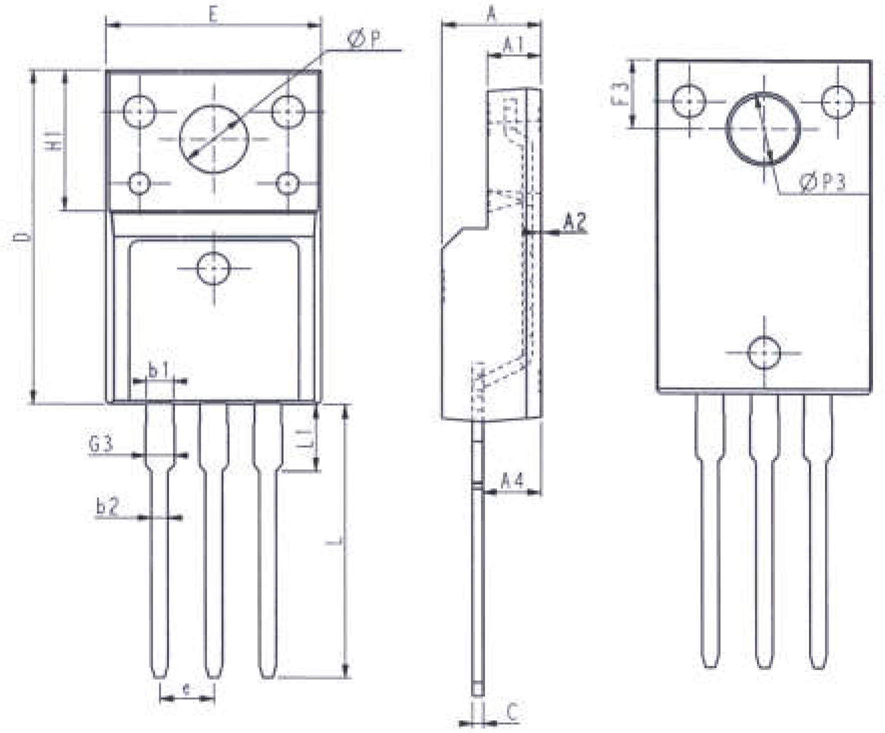


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



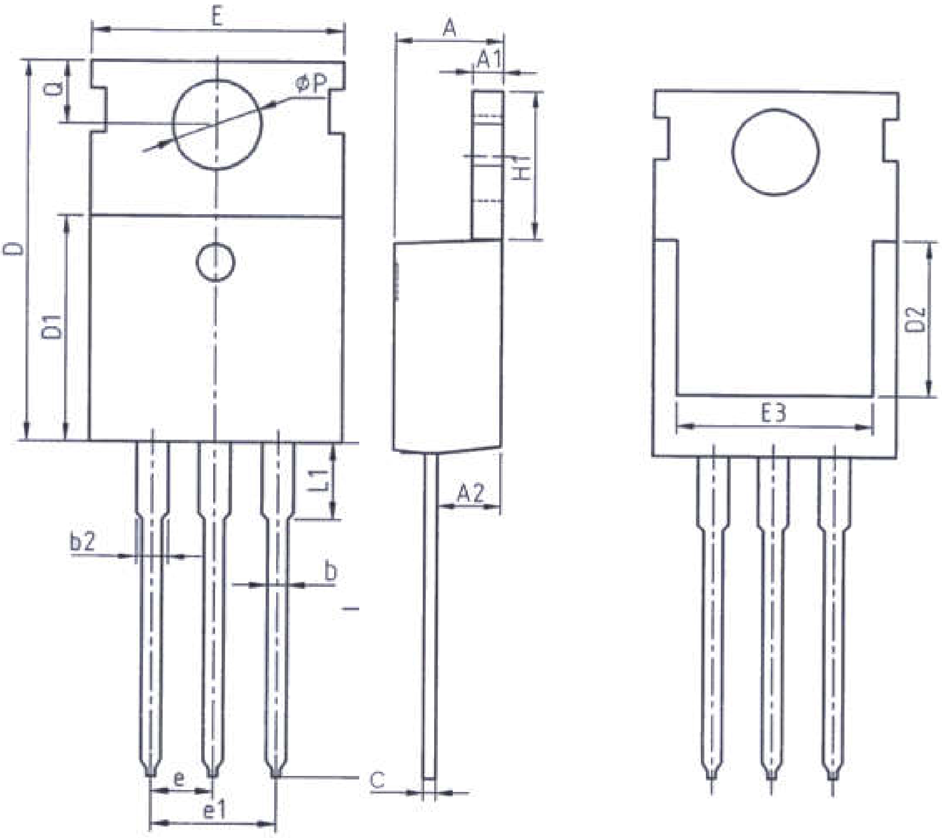
TO-220F



Unit: mm		
Symbol	Min.	Max.
E	9.96	10.36
A	4.50	4.90
A1	2.34	2.74
A2	0.30	0.60
A4	2.56	2.96
c	0.40	0.65
D	15.57	16.17
H1	6.70REF	
e	2.54BSC	

Unit: mm		
Symbol	Min.	Max.
L	12.68	13.28
L1	2.93	3.13
P	3.03	3.38
P3	3.15	3.65
F3	3.15	3.45
G3	1.25	1.55
b1	1.18	1.43
b2	0.70	0.95

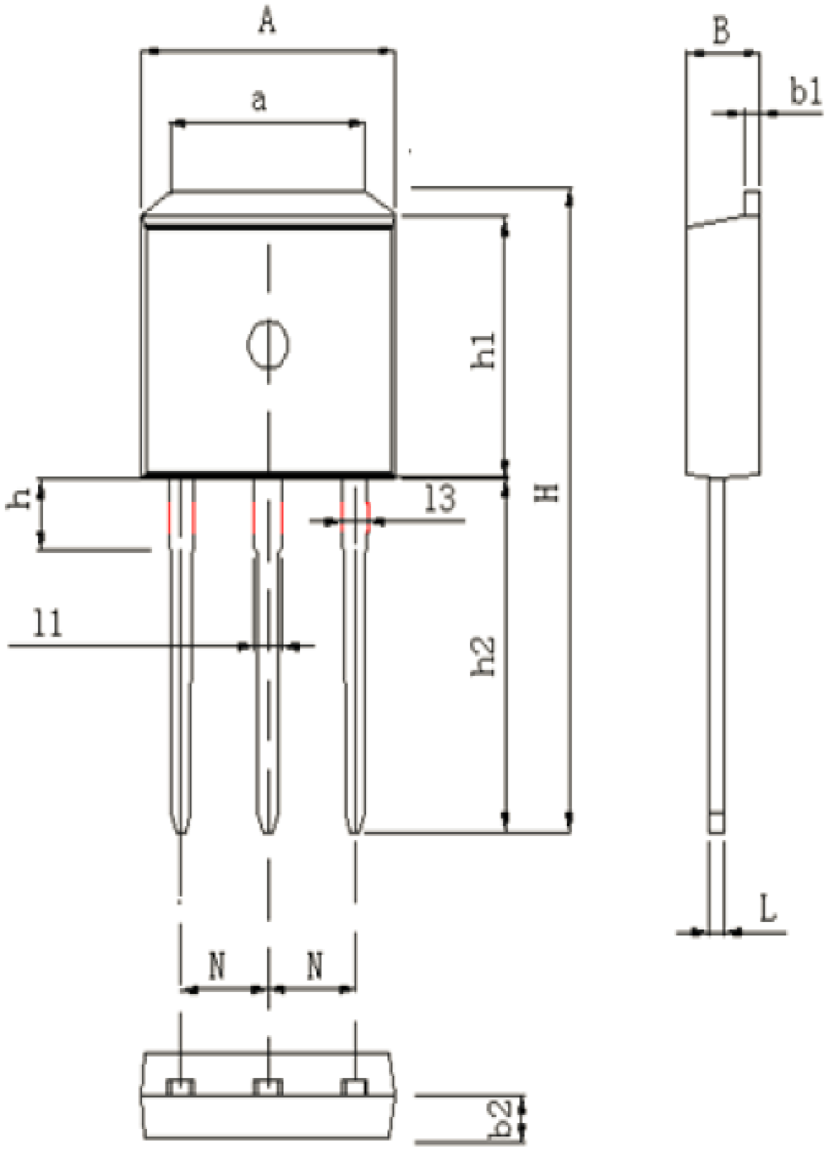
TO-220



Unit: mm		
Symbol	Min.	Max.
A	4.37	4.77
A1	1.25	1.45
A2	2.20	2.60
b	0.70	0.95
b2	1.17	1.47
c	0.40	0.65
D	15.10	16.10
D1	8.80	9.40
D2	5.50	–

Unit: mm		
Symbol	Min.	Max.
E	9.70	10.30
E3	7.00	–
e	2.54BSC	
e1	5.08BSC	
H1	6.25	6.85
L	12.75	13.80
L1	–	3.40
P	3.40	3.80
Q	2.60	3.00

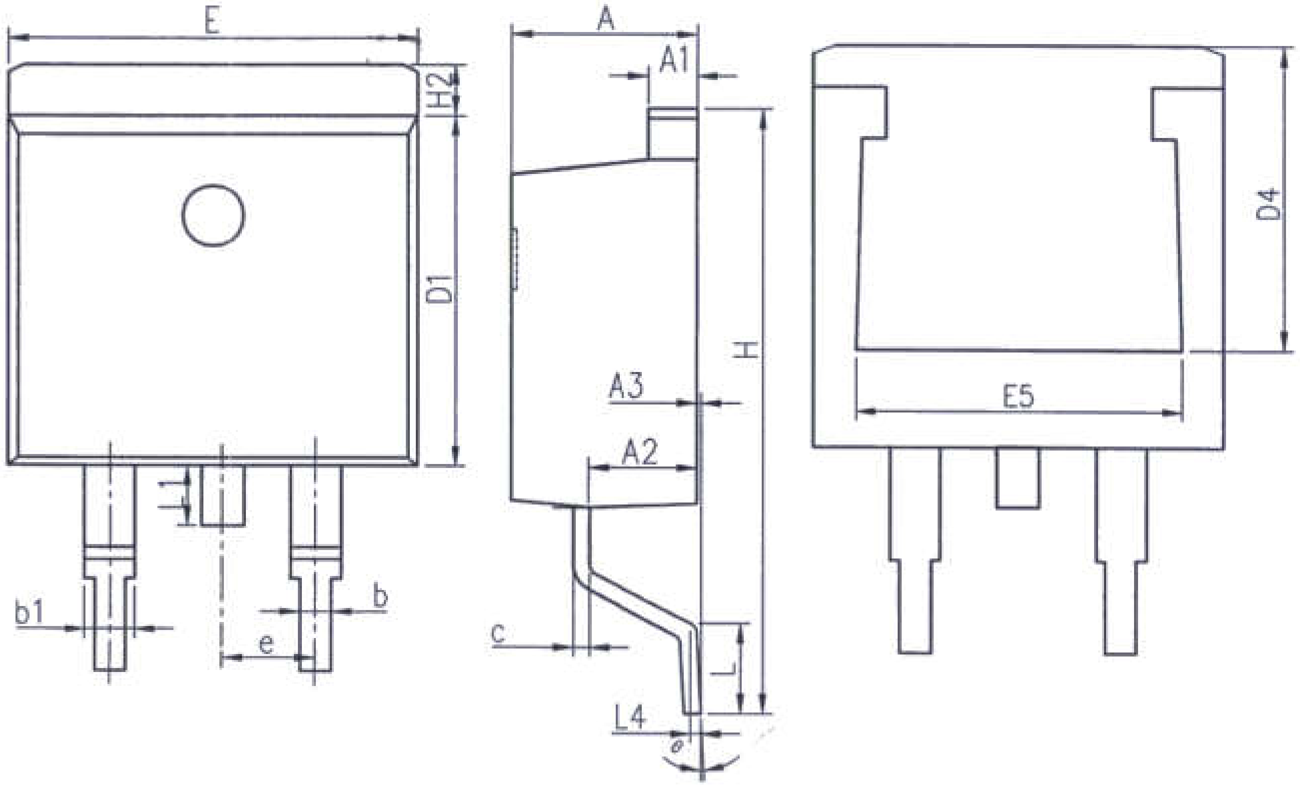
TO-262



DIM	MILLIMETERS
A	9.98±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	23.9±0.3
h	3.1±0.2
h1	9.16±0.2
h2	13.2±0.2
L	0.5±0.1
l1	1.3±0.1
l2	0.8±0.1
N	2.45±0.1

Unit :mm

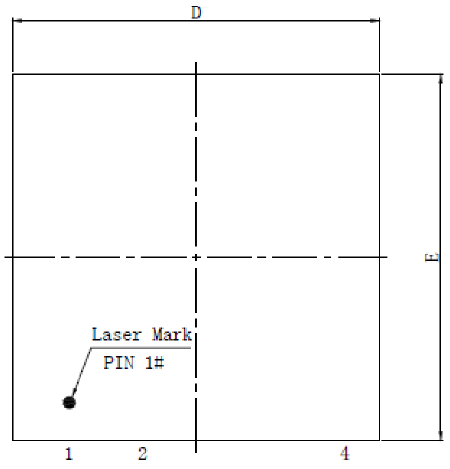
TO-263



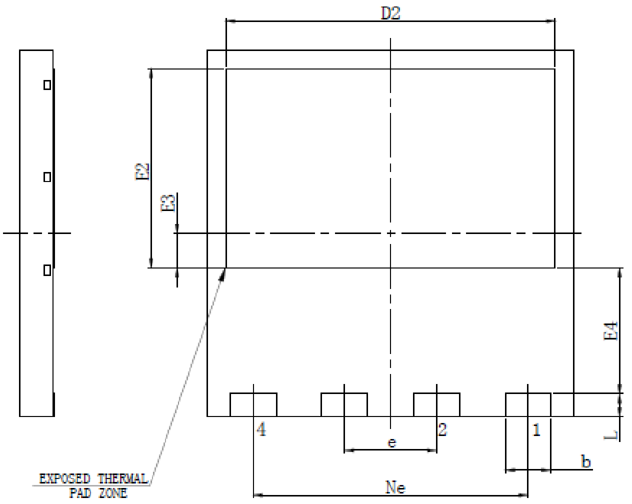
Unit: mm		
Symbol	Min.	Max.
A	4.37	4.77
A1	1.22	1.42
A2	2.49	2.89
A3	0.00	0.25
b	0.70	0.96
b1	1.17	1.47
c	0.30	0.53
D1	8.50	8.90
D4	6.60	-

Unit: mm		
Symbol	Min.	Max.
E	9.86	10.36
E5	7.06	-
e	2.54BSC	
H	14.70	15.50
H2	1.07	1.47
L	2.00	2.60
L1	1.40	1.70
L4	0.25BSC	
θ	0°	9°

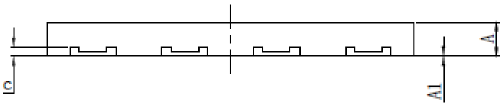
DFN 8x8



TOP VIEW



BOTTOM VIEW



SIDE VIEW

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0. 70	0.75	0. 80
A1	0	0. 02	0. 05
b	0. 95	1. 00	1. 05
c	0. 18	0.20	0. 25
D	7. 90	8. 00	8. 10
Ne	6. 00BSC		
e	2. 00BSC		
E	7. 90	8. 00	8. 10
D2	7. 10	7. 20	7. 30
E2	4. 25	4. 35	4. 45
E3	0. 75REF		
E4	2. 75REF		
L	0. 45	0. 50	0. 55
载体尺寸	7. 60*5. 15		