DESCRIPTION

The AM08NS10H is available in TO-220, TO-263-2 TO-252 and PDFN8(5x6) packages.

BVDSS	RDSON	ID
100V	7.5mΩ	60A

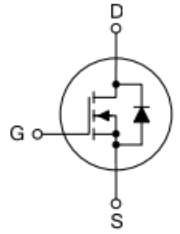
FEATURE

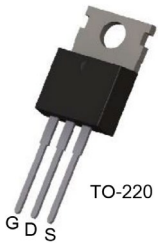
- Fast Switching
- Low On-Resistance
- Low Gate Charge
- Low Reverse transfer capacitances
- High avalanche ruggedness

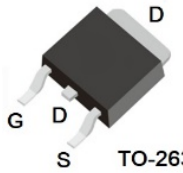
APPLICATIONS

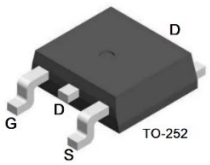
- Synchronous rectification
- High speed switching applications

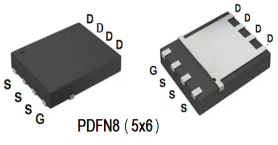
PIN DESCRIPTION











ORDERING INFORMATION

Package Type	Part Number	
TO-220 SPQ: 50pcs/Tube	T3	AM08NS10HT3U
		AM08NS10HT3VU
TO-263-2 SPQ: 800pcs/Reel	S2	AM08NS10HS2R
		AM08NS10HS2VR
TO-252 SPQ: 2,500pcs/Reel	D	AM08NS10HDR
		AM08NS10HDVR
PDFN8 (5x6) SPQ: 5,000pcs/Reel	PJ8	AM08NS10HPJ8R
		AM08NS10HPJ8VR
Note	U: Tube R: Tape & Reel V: Halogen free Package	
AiT provides all RoHS products		

Pin#				Symbol	Function
TO-220	TO-263-2	TO-252	PDFN8 (5x6)		
1	1	1	4	G	Gate
2	2,4	2,4	5,6,7,8	D	Drain
3	2	3	1,2,3	S	Source

ABSOLUTE MAXIMUM RATINGS

T_C = 25°C, unless otherwise specified.

V_{DSS}, Drain-Source Voltage		100V
I_D, Continuous Drain Current, Silicon Limited	TO-220, TO-263-2	71A
	TO-252, PDFN8(5x6)	66A
I_D, Continuous Drain Current, Package Limited		60A
I_D, Continuous Drain Current @T_C=100°C, Silicon Limited	TO-220, TO-263-2	45A
	TO-252, PDFN8(5x6)	42.3A
I_{DM}, Pulsed Drain Current (1)		240A
V_{GS}, Gate-Source Voltage		±20V
E_{AS}, Avalanche Energy (2)		156mJ
P_D, Power Dissipation	TO-220, TO-263-2	83W
	TO-252, PDFN8(5x6)	73.5W
P_D, Derating Factor above 25°C	TO-220, TO-263-2	0.66W/℃
	TO-252, PDFN8(5x6)	0.59W/℃
T_J, Operating Junction Temperature Range		150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃
T_L, Maximum Temperature for Soldering		260℃
$R_{\theta JA}$, Junction-to-Ambient		62.5℃/W
$R_{\theta JC}$, Thermal Resistance, Junction-Case	TO-220, TO-263-2	1.5℃/W
	TO-252, PDFN8(5x6)	1.7℃/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) Pulse width limited by maximum junction temperature

(2) L=0.5mH, I_{AS}=25A, Start T_J=25℃

ELECTRICAL CHARACTERISTICS

T_C = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	V_{DSS}	V_{GS}=0V, I_D=250μA	100	110	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V,	-	-	1	μA
		V_{DS}=80V, V_{GS}=0V, Tc=125℃	-	-	100	
Gate-Source Forward Leakage	$I_{GSS(F)}$	V_{GS}=+20V	-	-	100	nA
Gate-Source Reverse Leakage	$I_{GSS(R)}$	V_{GS}=-20V	-	-	-100	nA
ON Characteristics						
Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A	-	7.5	8	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=250μA	2	3	4	V
Pulse width tp≤300μs, δ≤2%						
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	2350	-	pF
Output Capacitance	C_{oss}		-	670	-	
Reverse Transfer Capacitance	C_{rss}		-	10	-	
Total Gate Charge	Q_g	V_{DD}=50V, I_D=30A, V_{GS}=10V	-	44.5	-	nC
Gate-Source Charge	Q_{gs}		-	12.9	-	
Gate-Drain Charge	Q_{gd}		-	10.8	-	
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V	-	1.1	-	Ω
Switching Characteristics						
Turn-On Delay Time	$t_{d(ON)}$	I_D=30A, V_{DD}=50V, V_{GS}=10V, R_G=5Ω Resistive Load	-	15	-	ns
Rise Time	t_r		-	10	-	
Turn-Off Delay Time	$t_{d(OFF)}$		-	33	-	
Fall Time	t_f		-	13	-	
Source-Drain Diode Characteristics						
Continuous Source Current	I_S		-	-	60	A
Maximum Pulsed Current	I_{SM}		-	-	240	A
Diode Forward Voltage	V_{SD}	I_S=30A , V_{GS}=0V	-	-	1.2	V
Reverse Recovery Time	T_{rr}	I_S=30A, V_{GS}=0V di/dt =100A/μA	-	43	-	ns
Reverse Recovery Charge	Q_{rr}		-	114	-	nC

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Safe Operating Area

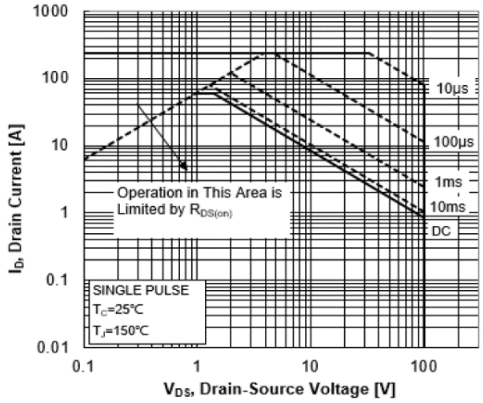


Fig 2. Maximum Power Dissipation
vs. Case Temperature (TO-220, TO-263-2)

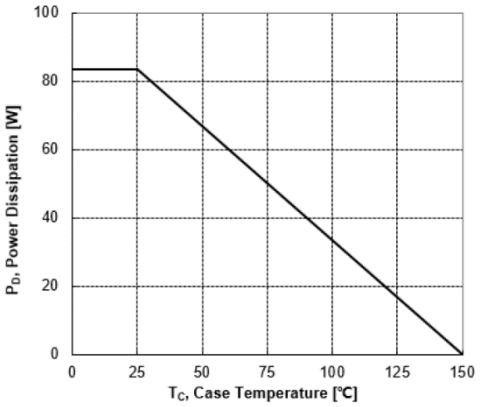


Fig3. Maximum Power Dissipation
vs. Case Temperature (TO-252, PDFN8(5x6))

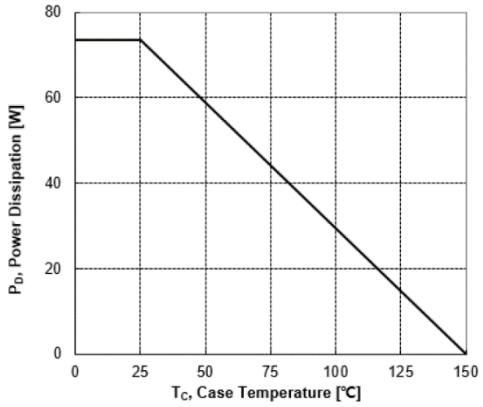


Fig4. Maximum Continuous Drain Current
vs. Case Temperature

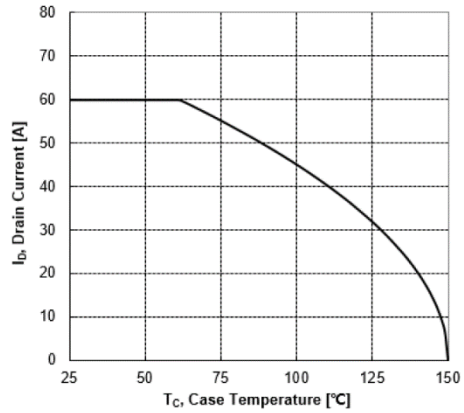


Fig5. Typical Output Characteristics

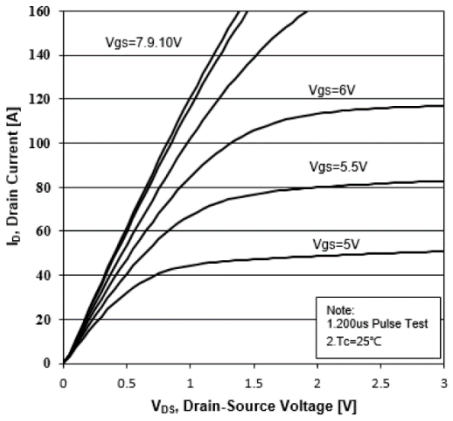


Fig6. Typical Transfer Characteristics

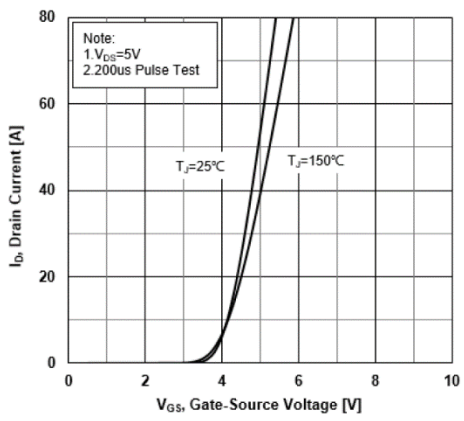


Fig7. Transient Thermal Impedance

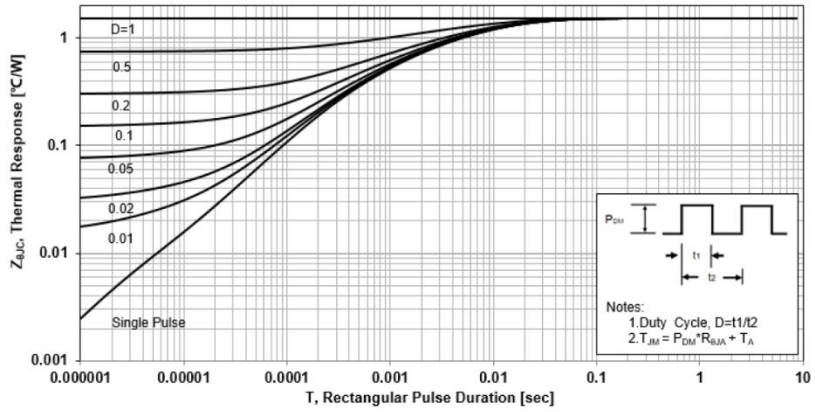


Fig8. Source-Drain Diode Forward Characteristics

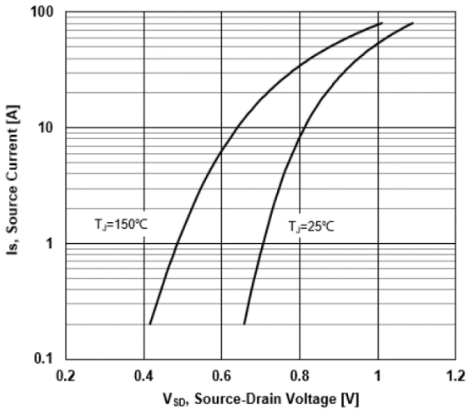


Fig9. Drain-Source On-Resistance vs. Drain Current

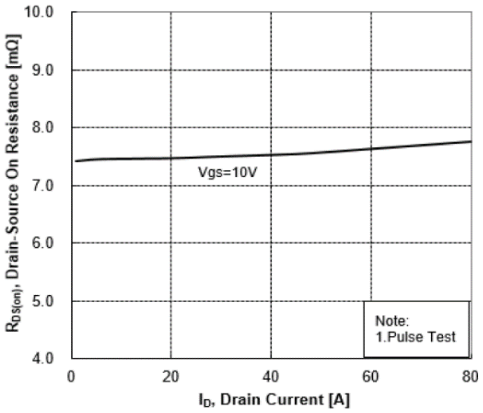


Fig10. Normalized On-Resistance vs. Junction Temperature

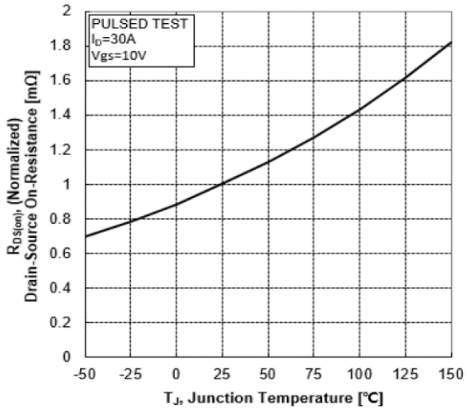


Fig11. Normalized Threshold Voltage vs. Junction Temperature

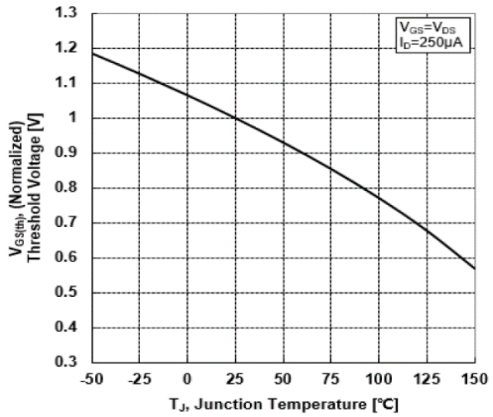


Fig 12. Normalized Breakdown Voltage vs. Junction Temperature

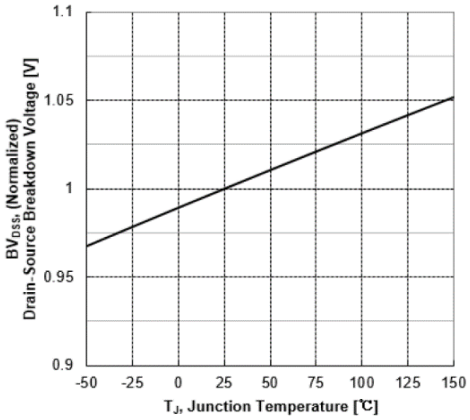


Fig 13. Capacitance Characteristics

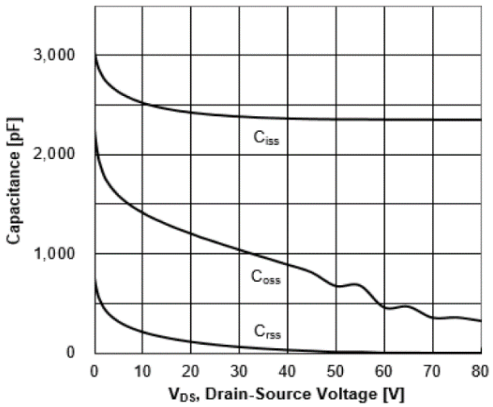


Fig14. Typical Gate Charge vs. Gate-Source Voltage

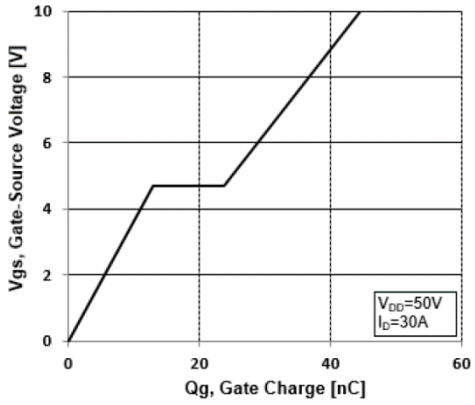


Fig15. Resistive Switching Test Circuit

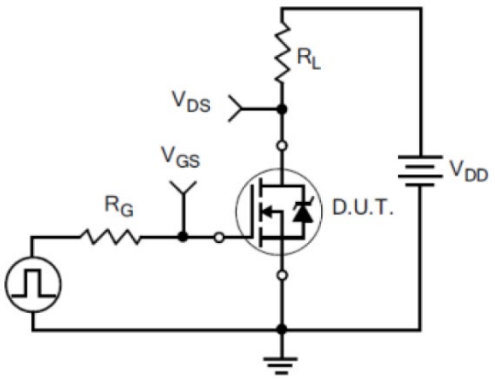


Fig16. Resistive Switching Waveforms

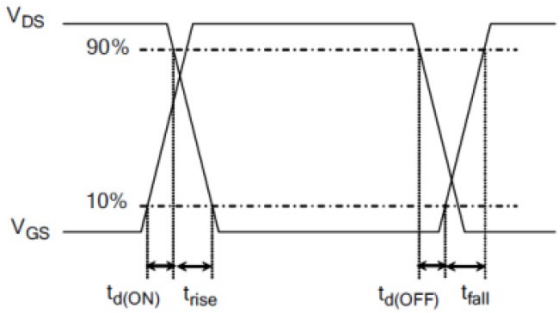


Fig17. Gate Charge Test Circuit

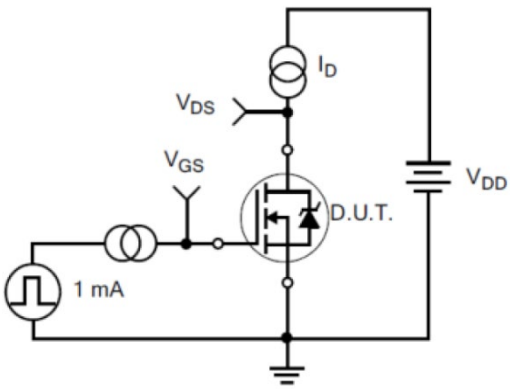


Fig 18. Gate Charge Waveforms

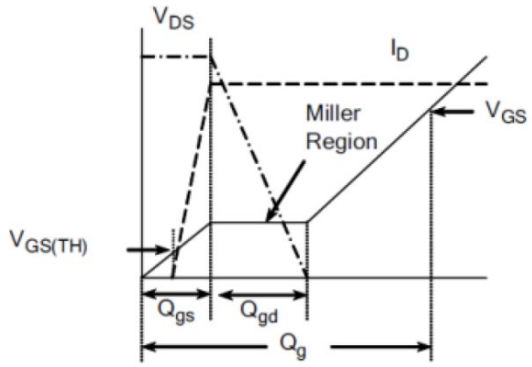


Fig 19. Diode Reverse Recovery Test Circuit

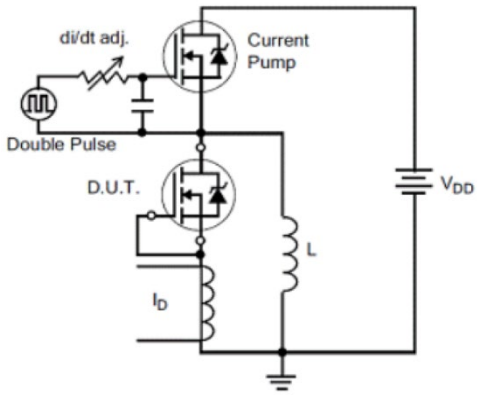


Fig20. Diode Reverse Recovery Waveform

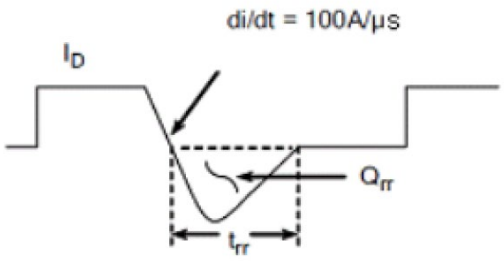


Fig21. Unclamped Inductive Switching Test Circuit

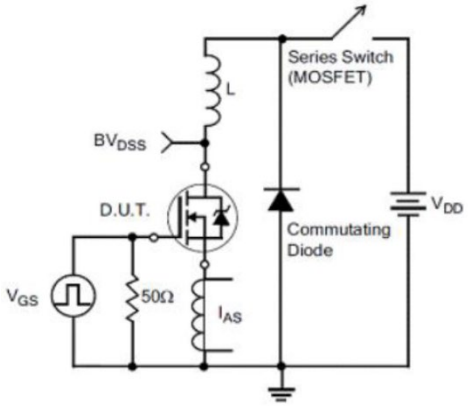
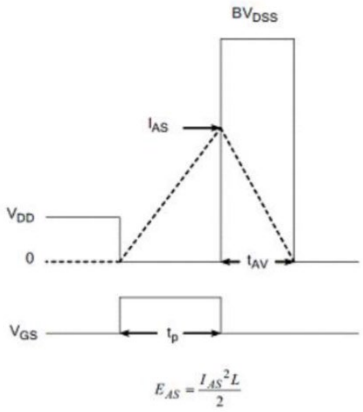


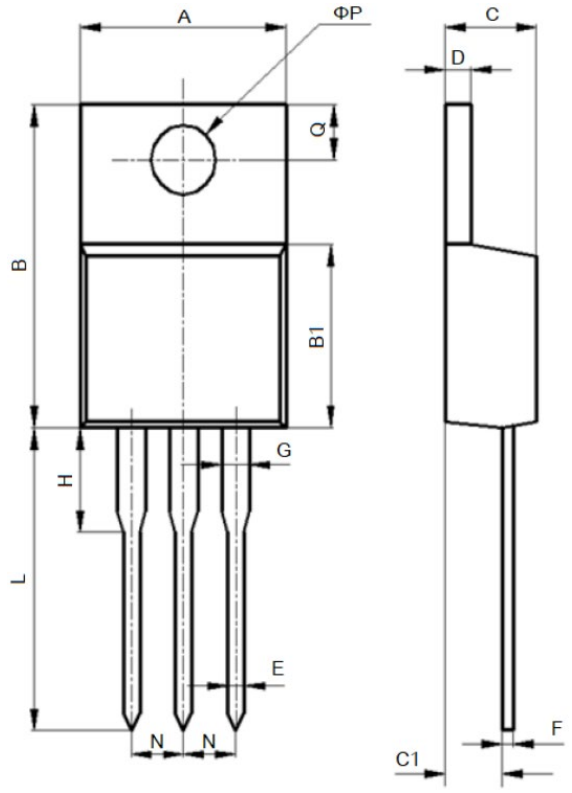
Fig22. Unclamped Inductive Switching Waveform



$$E_{AS} = \frac{I_{AS}^2 L}{2}$$

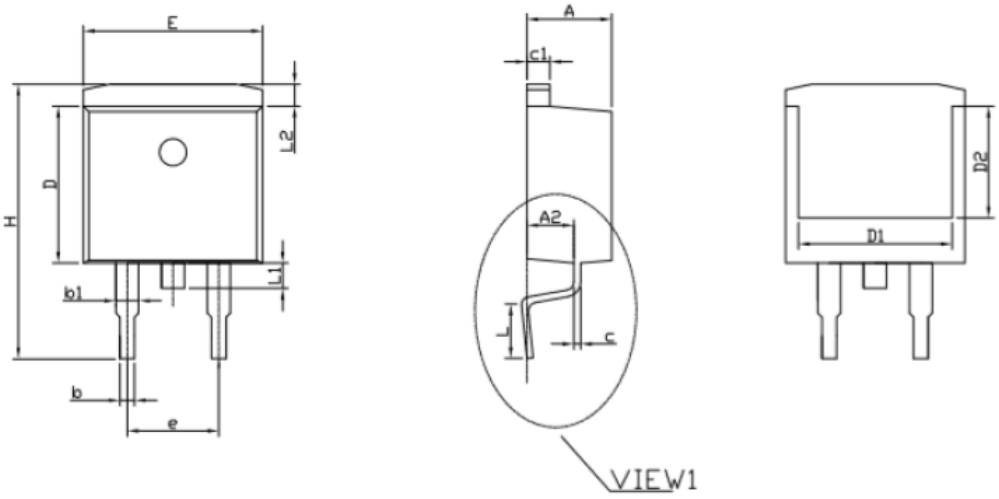
PACKAGE INFORMATION

Dimension in TO-220 (Unit: mm)



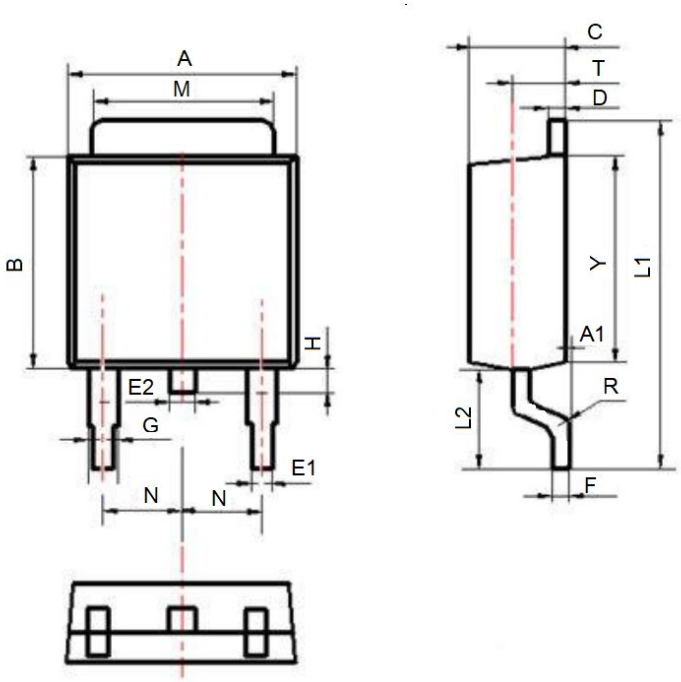
Symbol	Min.	Max.
A	9.600	10.600
B	15.000	16.000
B1	8.900	9.500
C	4.300	4.800
C1	2.300	3.100
D	1.200	1.400
E	0.700	0.900
F	0.300	0.600
G	1.170	1.370
H	2.700	3.800
L	12.600	14.800
N	2.340	2.740
Q	2.400	3.000
ΦP	3.500	3.900

Dimension in TO-263-2 (Unit: mm)



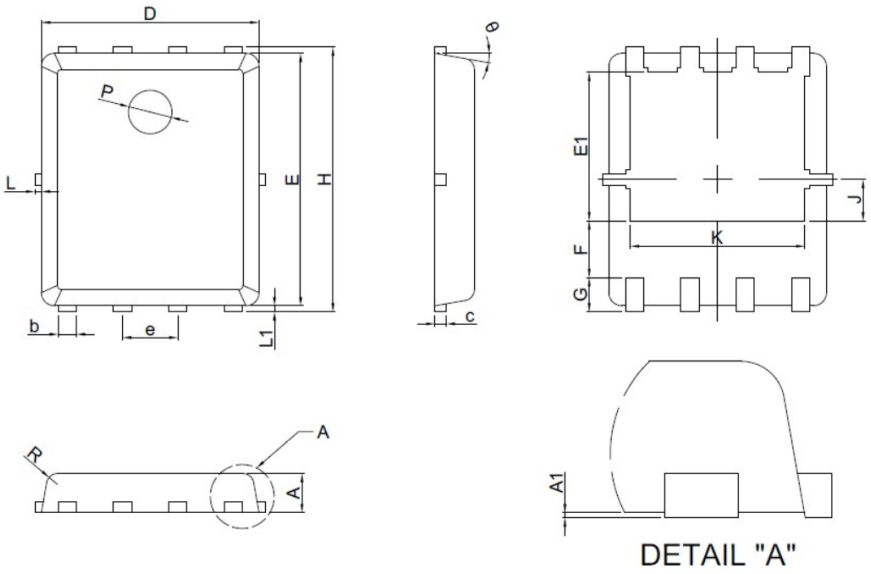
Symbol	MILLIMETERS	
	Min.	Max.
A	4.400	4.800
A1	0.050	0.300
A2	2.250	2.550
b	0.720	0.920
b1	1.120	1.420
c	0.400	0.600
c1	1.200	1.400
D	8.800	9.400
D1	7.750	8.150
D2	6.550	6.950
E	9.650	10.350
e	4.980	5.180
H	14.700	15.600
L	2.300	2.600
L1	1.200	1.600
L2	0.950	1.300

Dimension in TO-252 (Unit: mm)



Symbol	MILLIMETERS	
	Min.	Max.
A	6.300	6.900
A1	0.000	0.130
B	5.700	6.300
C	2.100	2.500
D	0.300	0.600
E1	0.600	0.900
E2	0.700	1.000
F	0.300	0.600
G	0.700	1.200
L1	9.600	10.500
L2	2.700	3.100
H	0.600	1.000
M	5.100	5.500
N	2.090	2.490
R	0.300	0.300
T	1.400	1.600
Y	5.100	6.300

Dimension in PDFN8(5x6) (Unit: mm)



Symbol	MILLIMETERS	
	Min.	Max.
A	0.800	1.000
A1	0.000	0.050
b	0.350	0.490
c	0.254 REF	
D	4.900	5.100
E	5.700	5.900
E1	3.350	3.650
e	1.270 BSC	
F	1.400 REF	
G	0.600 REF	
H	5.950	6.200
J	0.950 BSC	
K	4.000 REF	
L	-	0.150
L1	0.100	0.180
P	1.000 REF	
R	0.250 REF	
θ	6°	14°

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