

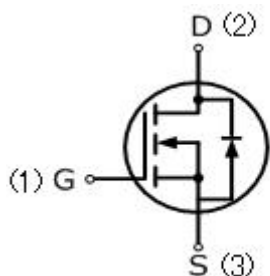
CURRENT 90 Ampere
VOLTAGE RANG 100 Volts

ASE90N10

FEATURE

- 90A,100V, $R_{DS(ON)MAX}=8.0m\Omega$ $V_{GS}=10V/20A$
 $R_{DS(ON)MAX}=10.0m\Omega$ $V_{GS}=4.5V/20A$
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

TO-220CB



Absolute Maximum Ratings($T_C=25^{\circ}C$, unless otherwise noted)			
Parameter	Symbol	ASE90N10	UNIT
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 20	
Continuous Drain Current	I_D	90	A
Pulsed Drain Current(Note1)	I_{DM}	360	
Single Pulse Avalanche Energy (Note 2)	E_{AS}	160	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^{\circ}C$
Channel Temperature	T_{CH}	150	$^{\circ}C$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	260	$^{\circ}C$

Thermal Characteristics			
Parameter	Symbol	MAX	Units
Thermal resistance , Channel to Case	$R_{th(ch-c)}$	1.0	$^{\circ}C/W$
Maximum Power Dissipation	$T_C=25^{\circ}C$ P_D	125	W

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Electrical Characteristics (T _c =25℃,unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V,I _D =250uA	100	—	—	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V _{GS} =0V	—	—	1	μ A
	I _{DSS}	V _{DS} =100V _{GS} =0V (T _J =100℃)	—	—	100	μ A
Gate-Body Leakage Current,Forward	I _{GSS}	V _{GS} =± 20V _{DS} =0V	—	—	± 100	nA
On Characteristics						
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	1.0	—	3.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V,I _D =20A	—	7.0	8.0	m Ω
		V _{GS} =4.5V,I _D =20A		8.0	10.0	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V,V _{GS} =0V, f=1.0MHZ	—	2605	—	pF
Output Capacitance	C _{oss}		—	940	—	pF
Reverse Transfer Capacitance	C _{rss}		—	7	—	pF
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =50V, I _D =20A,R _{GEN} =10Ω V _{GS} =10V	—	14	—	ns
Turn-On Rise Time	t _r		—	2	—	ns
Turn-Off Delay Time	t _{d(off)}		—	52	—	ns
Turn-Off Fall Time	t _f		—	85	—	ns
Total Gate Charge	Q _g	V _{DS} =80V,I _D =20A, V _{GS} =10V	—	47	—	nC
Gate-Source Charge	Q _{gs}		—	11	—	nC
Gate-Drain Charge	Q _{gd}		—	8	—	nC
Drain-Source Body Diode Charcteristics and Maximum Ratings						
Diode Forward Voltage	V _{SD}	I _S =20A,V _{GS} =0V	—	—	1.2	V
Reverse Recovery Time	t _{rr}	V _R =50V,I _F =20A,	—	65	—	ns
Reverse Recovery Charge	Q _{rr}	dI _F /dt=100A/us	—	125	—	nC

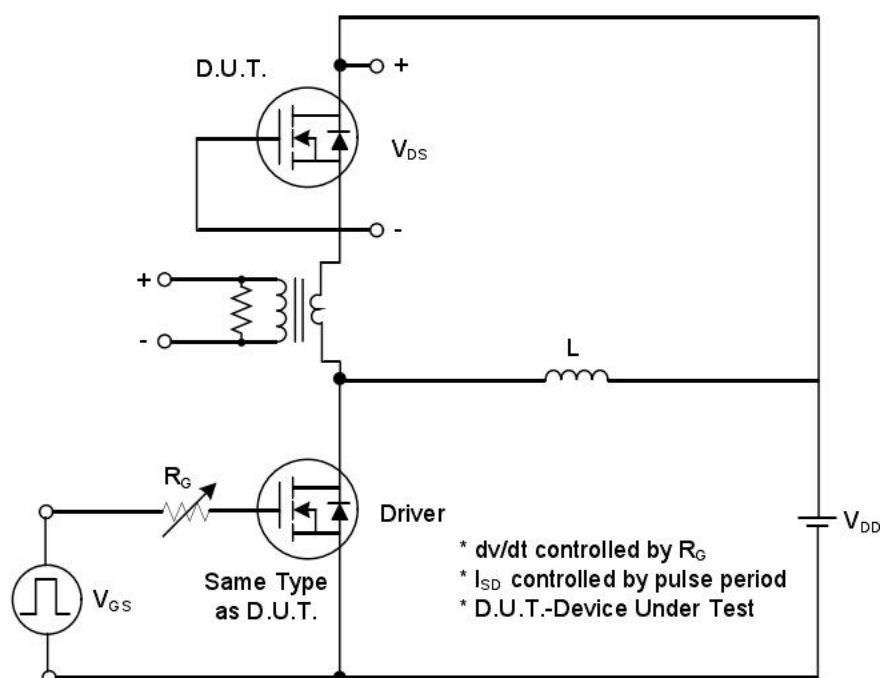
Notes

1. Repetitive Rating; pulse width limited by maximum junction temperature.
2. L=0.3mH, starting T_J=25°C.
3. dI/dt=200A/μs, starting T_J=25°C, Pulse width≤300μs; duty cycle≤2%.
4. Repetitive rating; pulse width limited by maximum junction temperature.

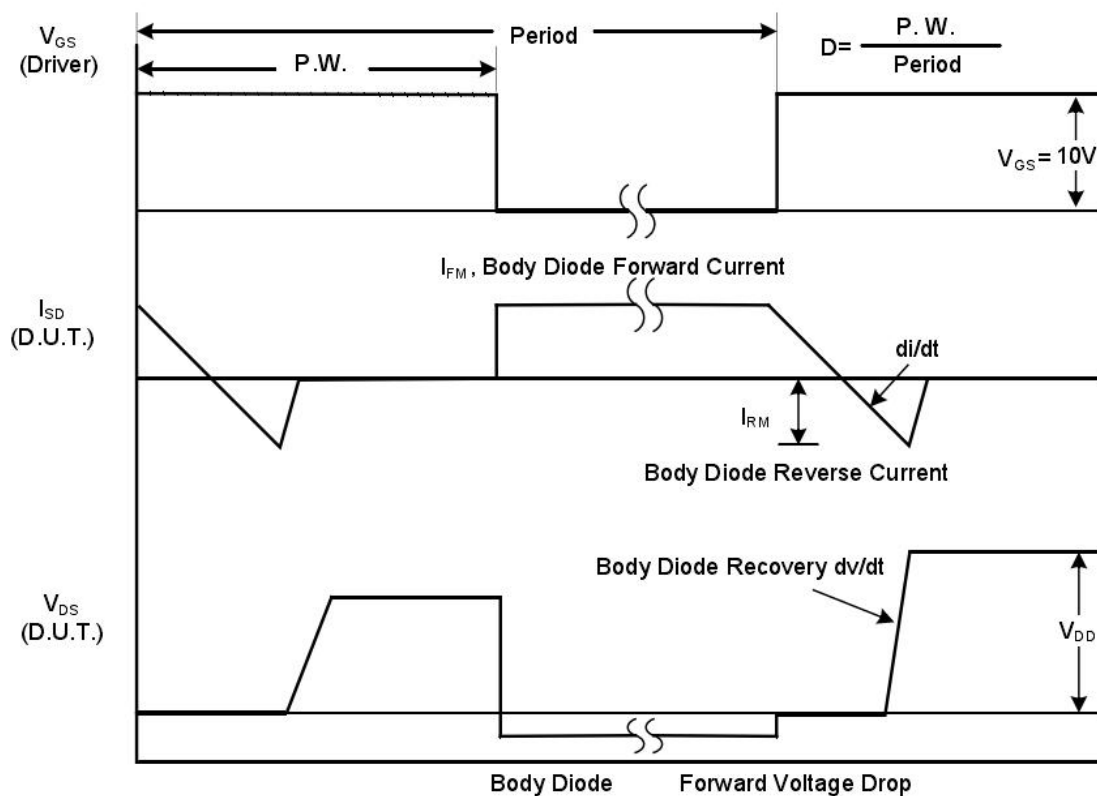
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RATING AND CHARACTERISTIC CURVES



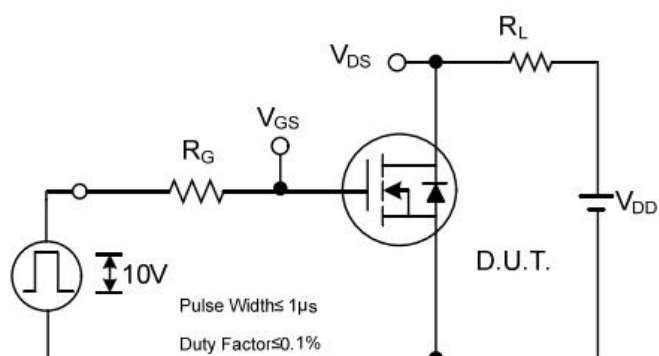
Peak Diode Recovery dv/dt Test Circuit



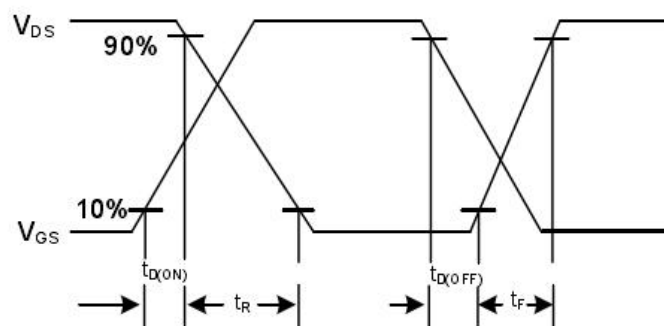
Peak Diode Recovery dv/dt Waveforms

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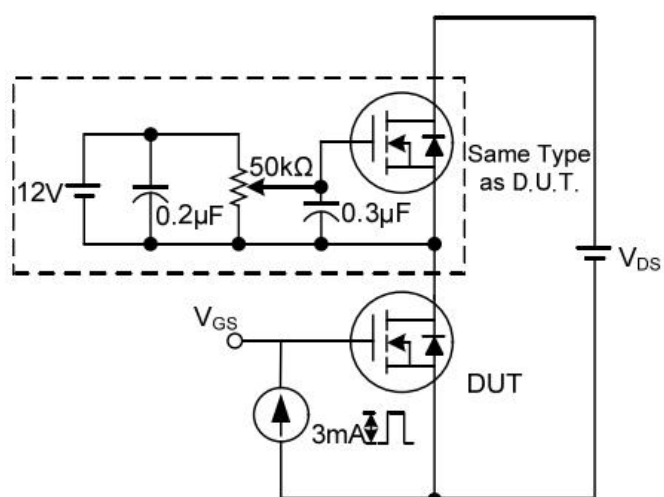
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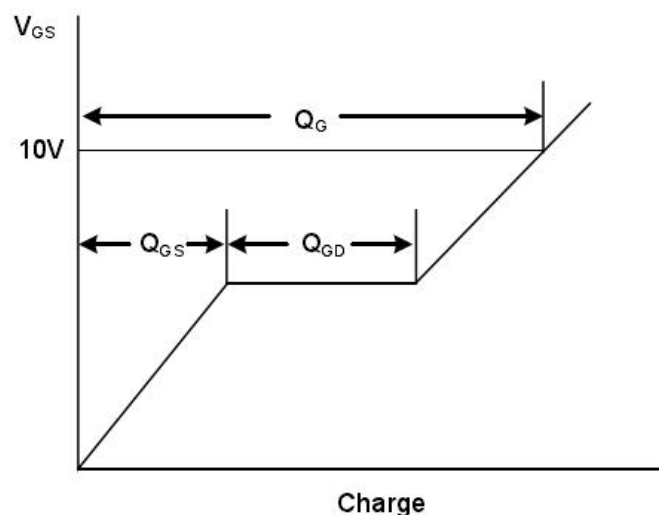
Switching Test Circuit



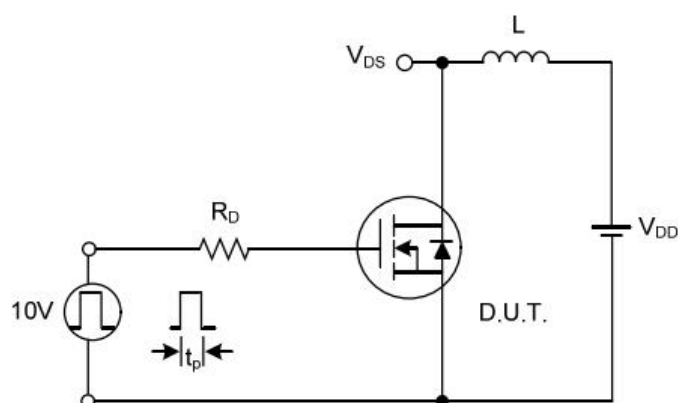
Switching Waveforms



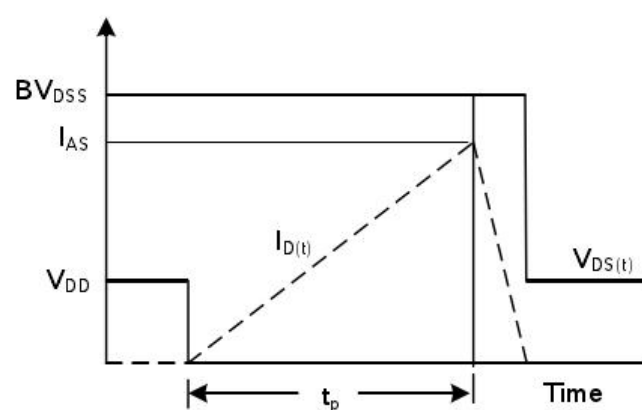
Gate Charge Test Circuit



Gate Charge Waveform



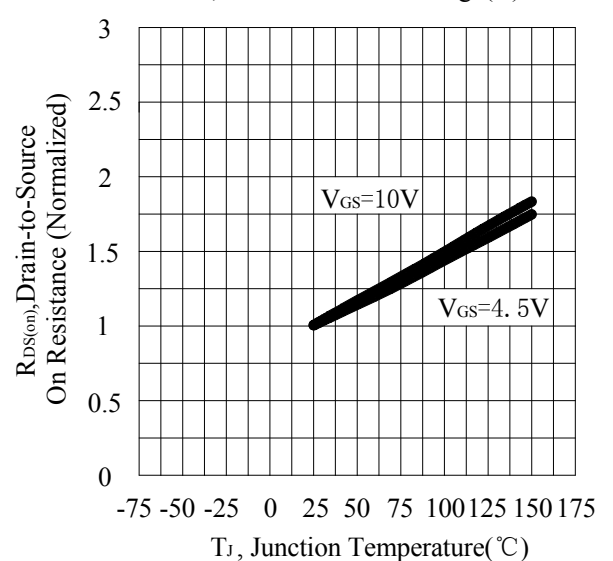
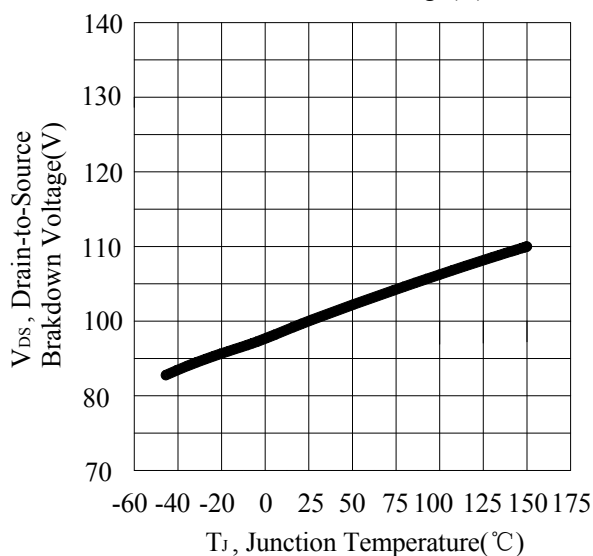
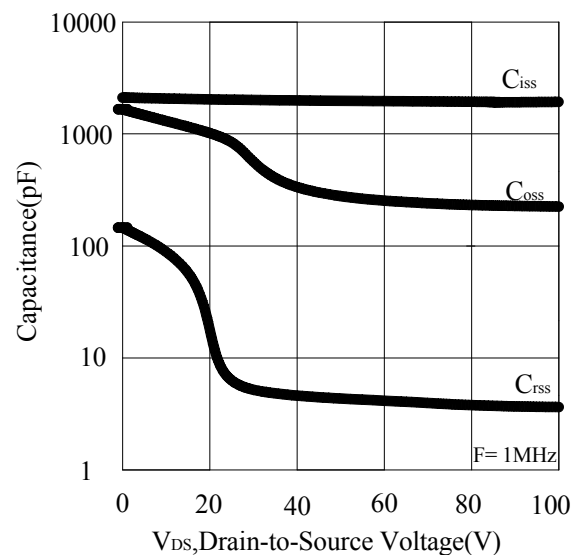
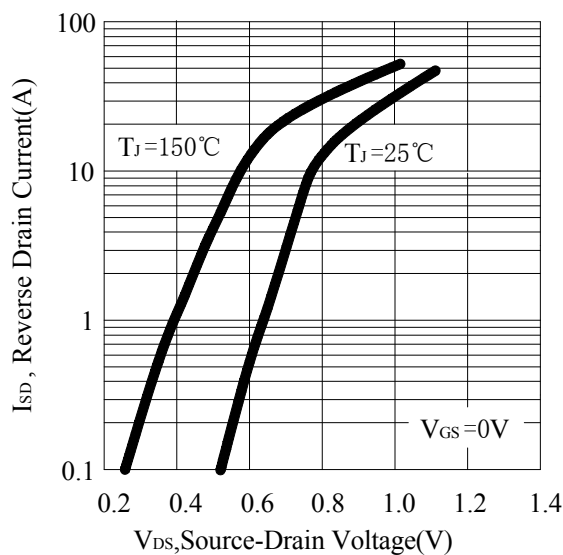
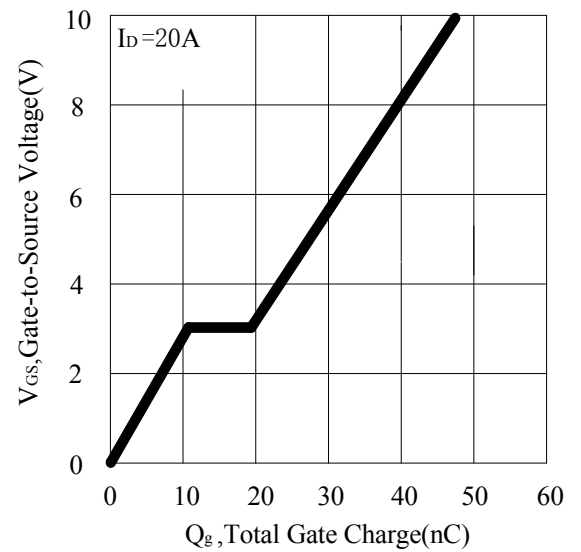
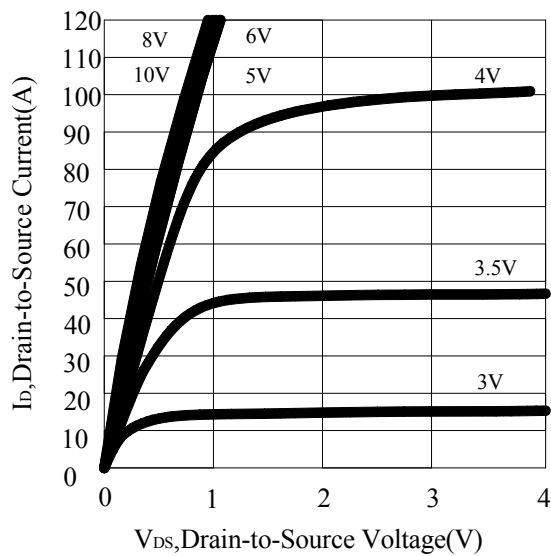
Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

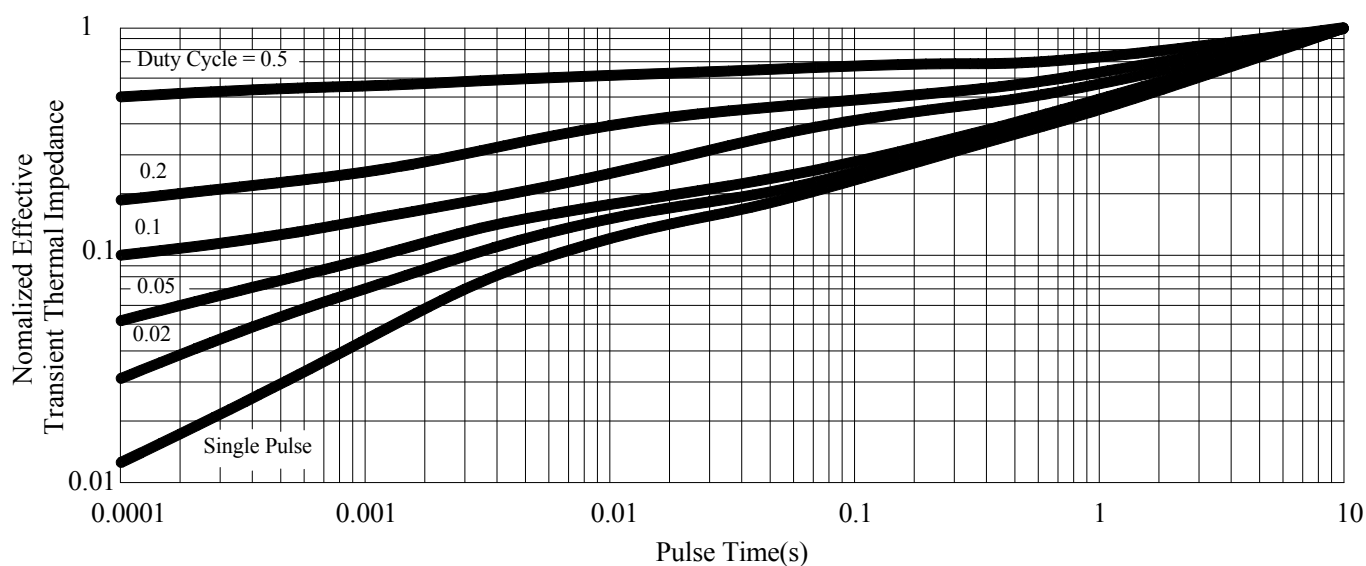
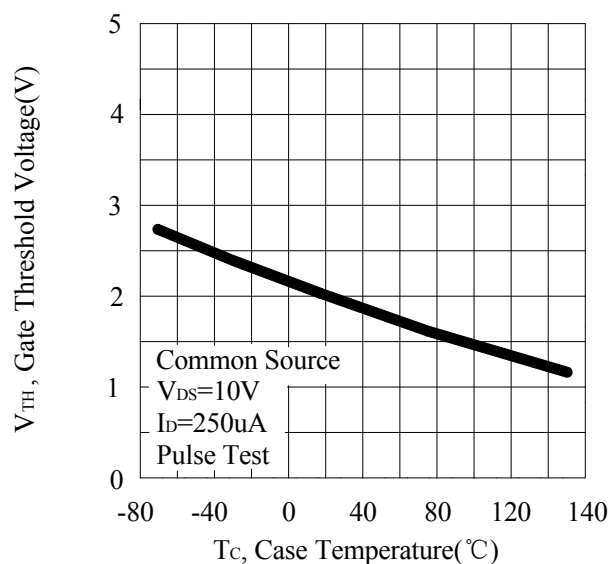
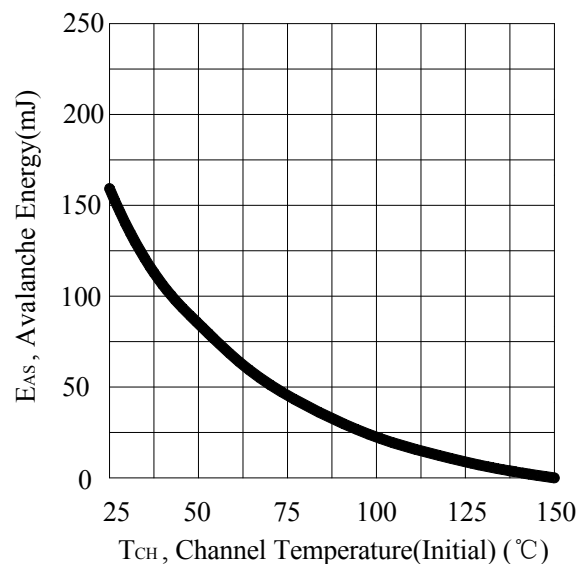
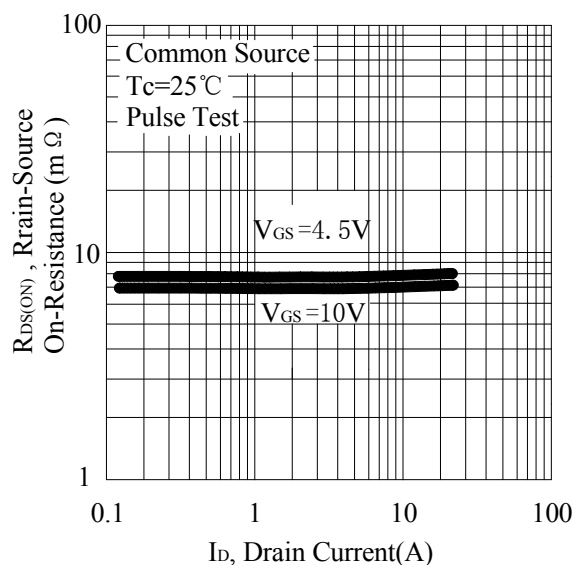
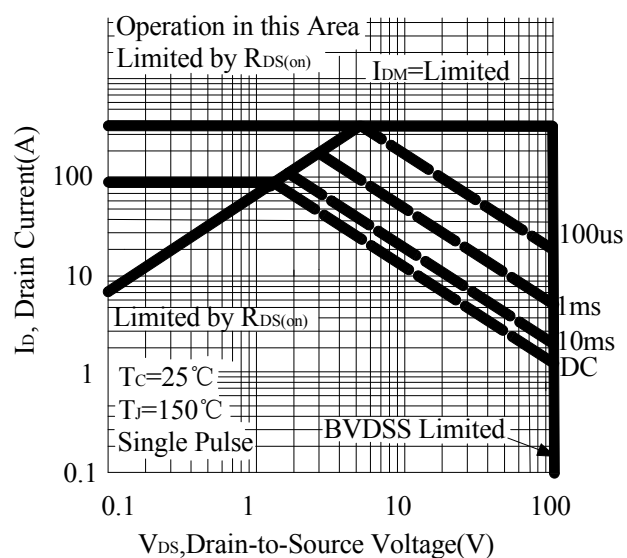
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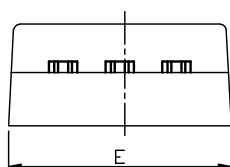
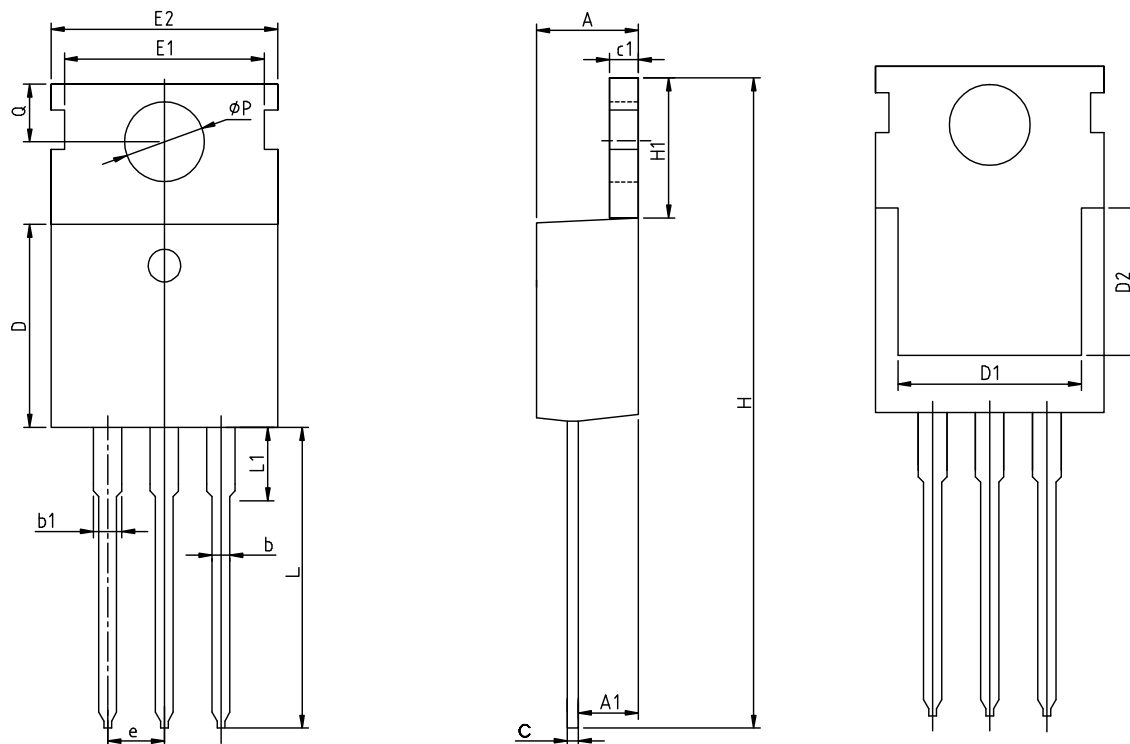
ASE90N10



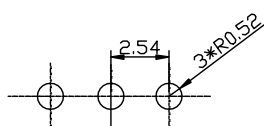
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TO-220CB-3L PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



UNIT: mm

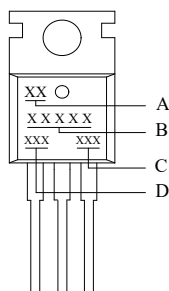
	MIN	NOM	MAX
A	4.40	4.60	4.80
A1	2.25	2.40	2.55
b	0.72	0.82	0.92
b1	1.12	1.27	1.42
c	0.40	0.50	0.60
c1	1.20	1.30	1.40
D	8.80	9.10	9.40
D1	7.75	7.95	8.15
D2	6.55	6.75	6.95
e		2.54BSC	
E	9.65	10.00	10.35
E1		8.70	
E2	9.70	10.00	10.30
H	28.70	29.20	29.70
H1	6.25	6.50	6.85
L	13.20	13.50	13.80
L1	2.80	3.10	3.40
Q	2.60	2.80	3.00
ΦP	3.45	3.60	3.75

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Marking and packaging illustration

1、Marking



SYMBOL	Explanation
A	Trademark (PY)
B	Product Name
C	Date Code
D	Product Information

2、Packaging

Tube			
Inside Box		Outside Box	

类别	A (mm)	B (mm)	C (mm)
TO-220 Tube(50EA per tube)	530±5	7±0.8	33±1
TO-220 Inside Box (1K per box)	542±5	82±2	78±1
TO-220 outside Box (6K per box)	555±5	285±5	245±5