

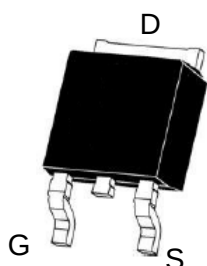
FEATURE

- Low gate charge
- Low Ciss
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

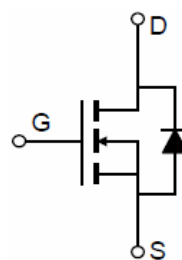
Product Summary



V_{DS}	60	V
$R_{DS(on),Max}@ V_{GS}=10\text{ V}$	17	mΩ
I_D	50	A



TO-252 top view



Schematic diagram

Absolute Maximum Ratings ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	50	A
Drain Current-Continuous($T_C=100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	42	A
Pulsed Drain Current	I_{DM}	200	A
Maximum Power Dissipation	P_D	62.5	W
Derating factor		0.73	W/ $^{\circ}\text{C}$
Single pulse avalanche energy (Note 5)	E_{AS}	31	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}\text{C}$

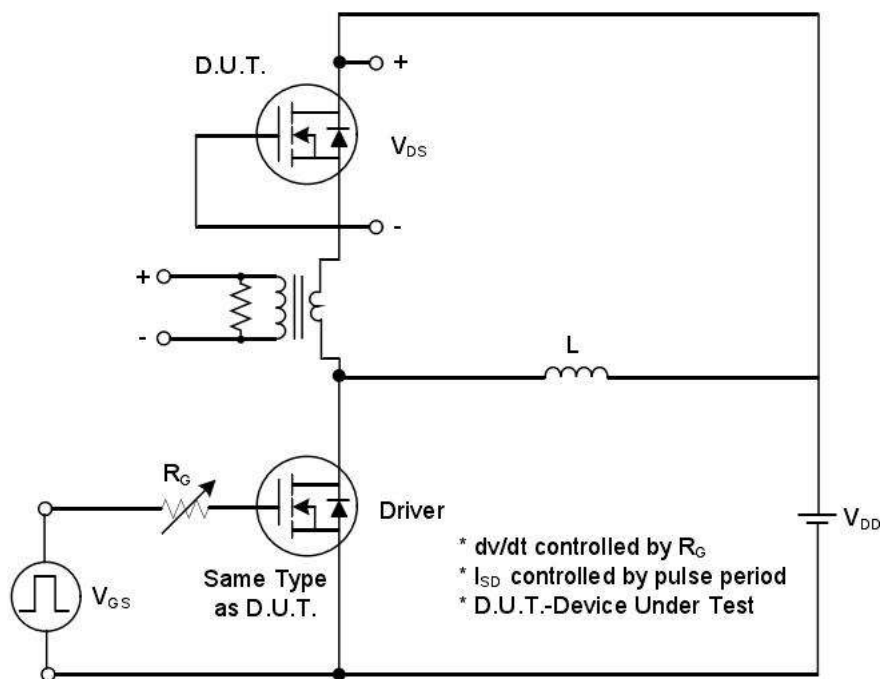
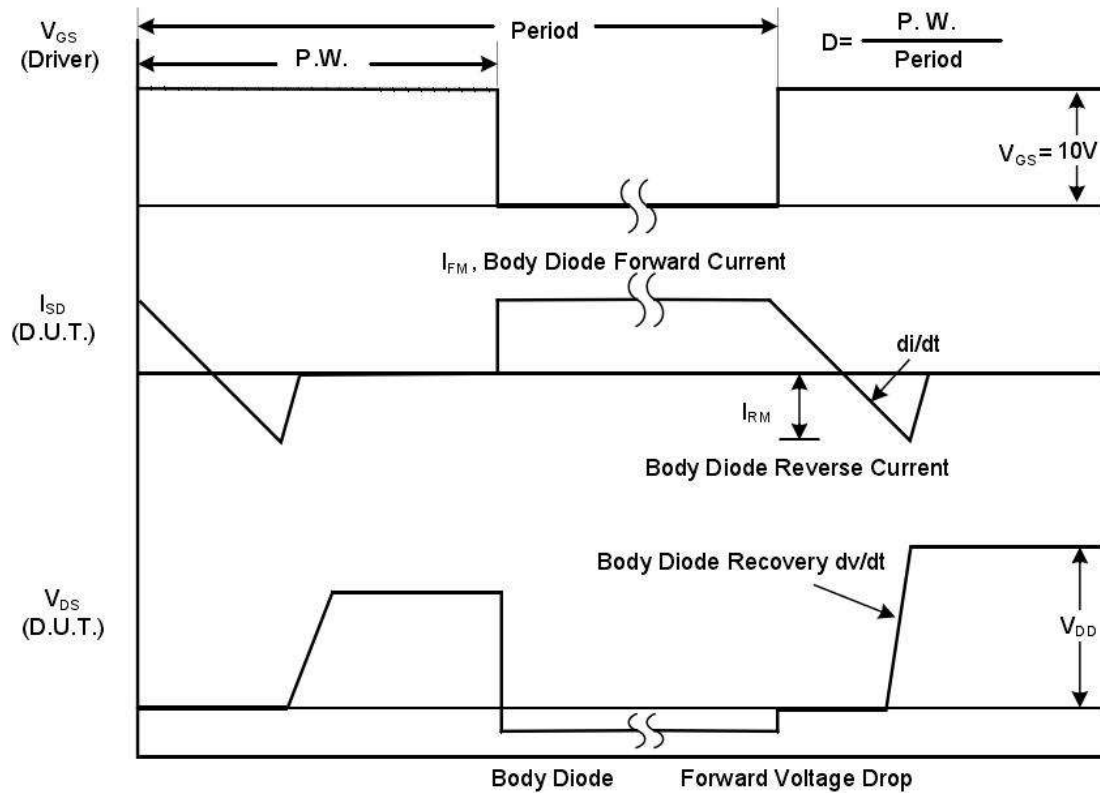
Thermal Characteristics

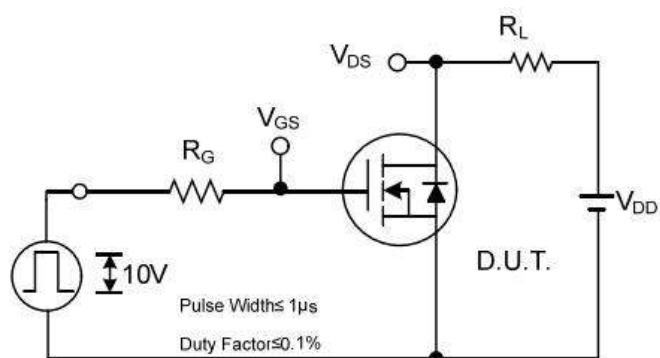
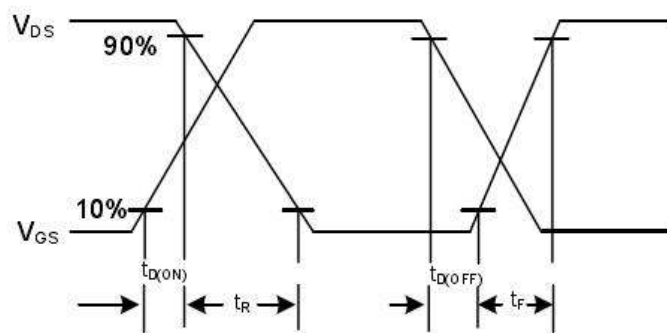
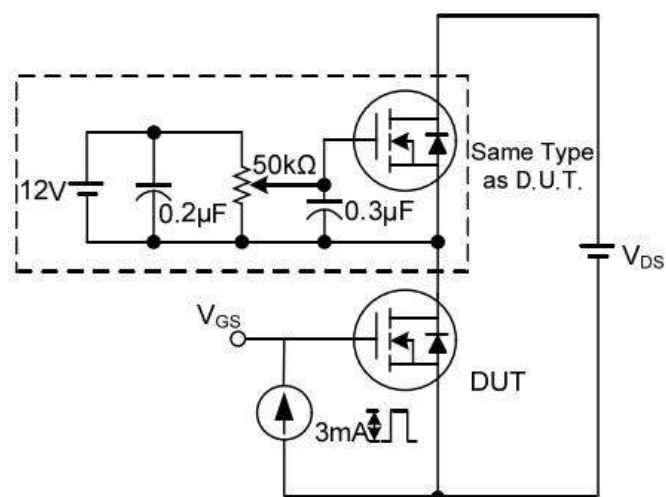
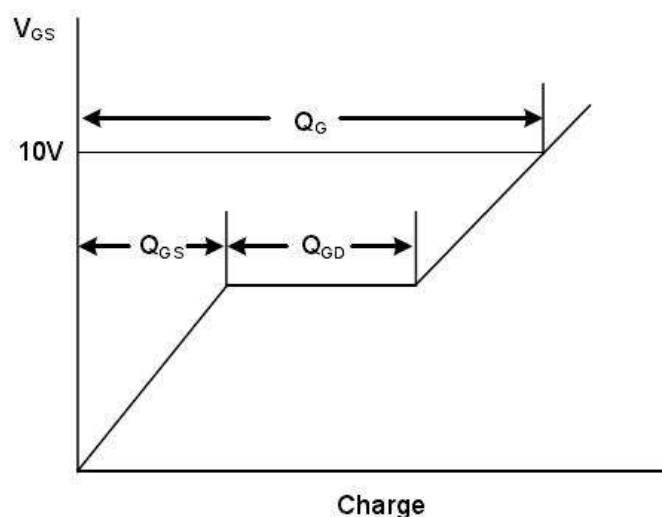
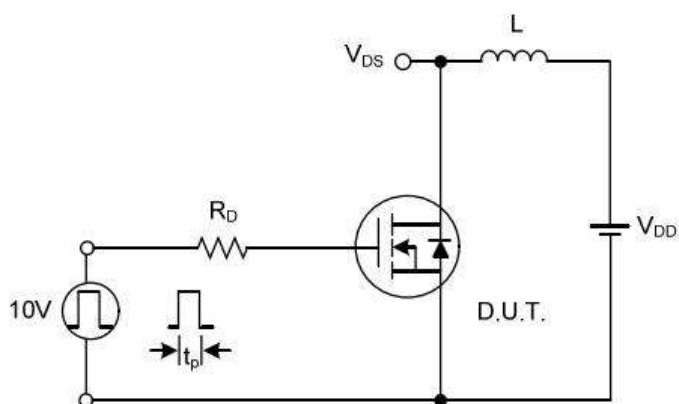
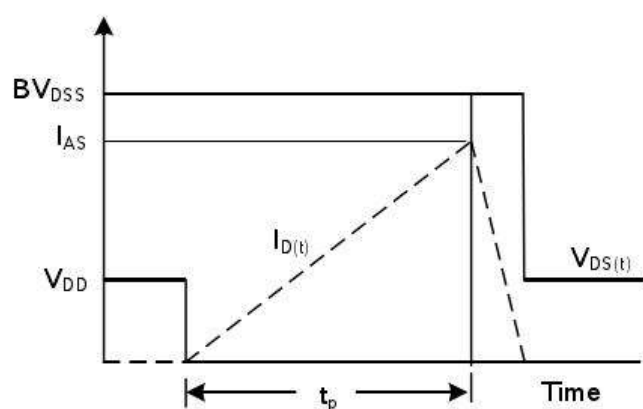
Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.0	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	$^{\circ}\text{C/W}$

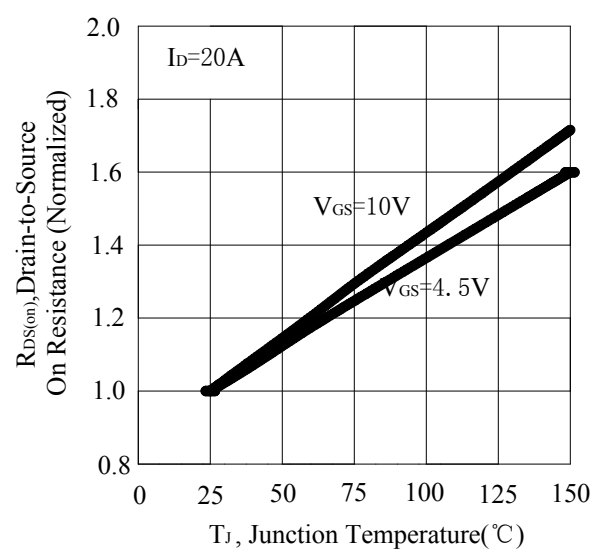
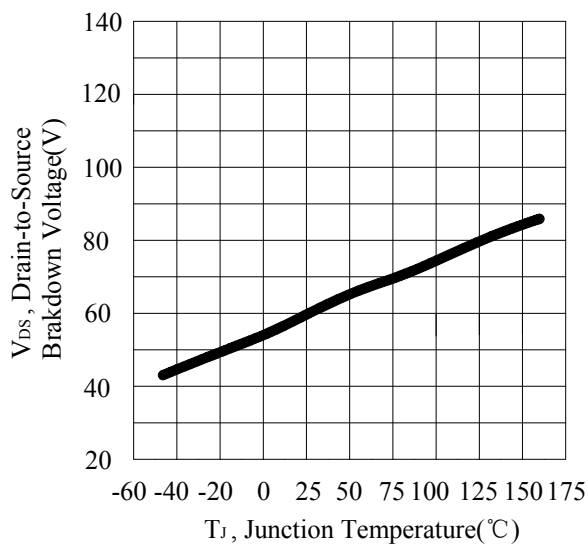
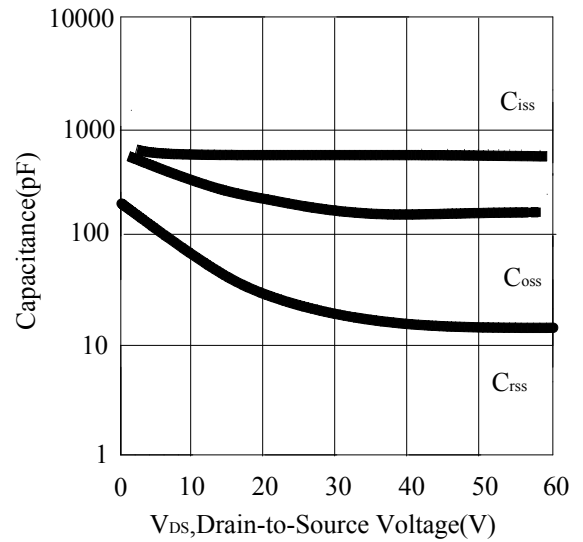
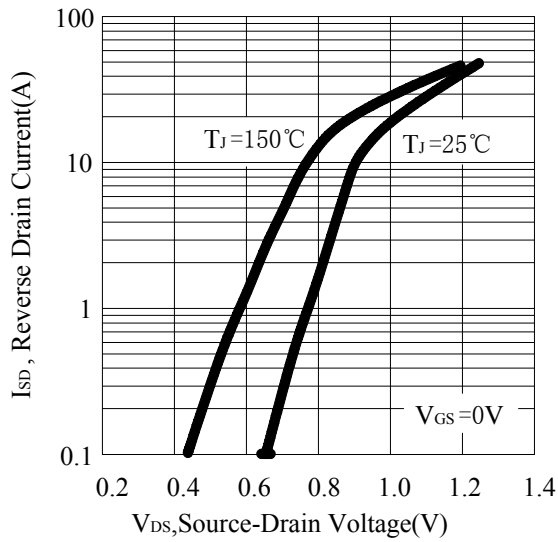
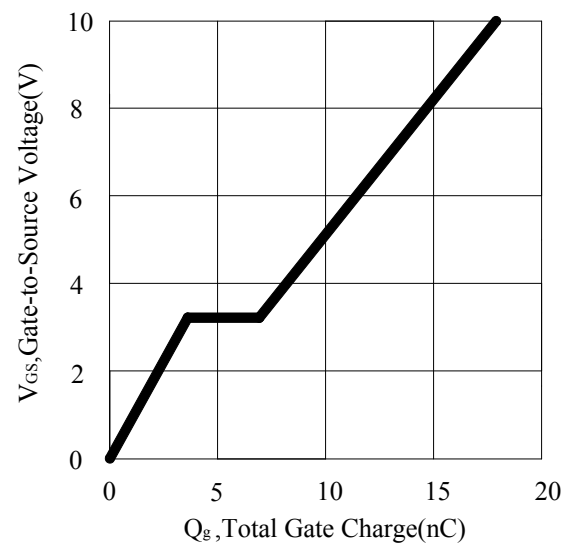
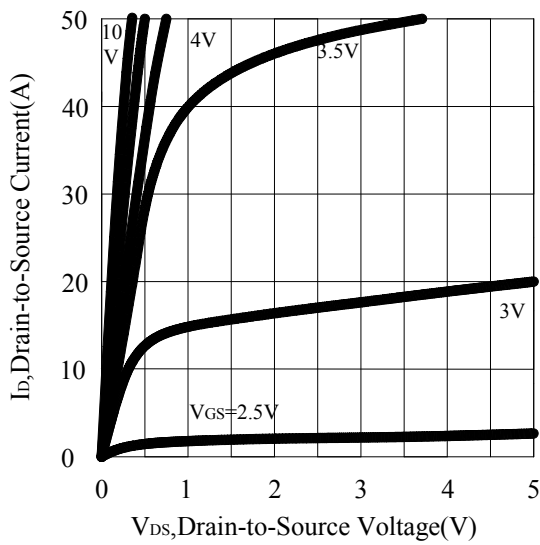
Electrical Characteristics (T _c =25℃,unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V,I _D =250uA	60	—	—	V
Breakdown Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25℃ , I _D =250uA	—	0.021	—	V/℃
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V,V _{GS} =0V	—	—	1	uA
Gate-Body Leakage Current,Forward	I _{GSSF}	V _{GS} =20V,V _{DS} =0V	—	—	100	nA
Gate-Body Leakage Current,Reverse	I _{GSSR}	V _{GS} =-20V,V _{DS} =0V	—	—	-100	nA
On Characteristics						
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	1.0	—	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V,I _D =20A	—	—	17	mΩ
		V _{GS} =4.5V,I _D =20A	—	—	23	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =30V,V _{GS} =0V, f=1.0MHZ	—	880	—	pF
Output Capacitance	C _{oss}		—	255	—	pF
Reverse Transfer Capacitance	C _{rss}		—	16	—	pF
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =30V,V _{GS} =10V, R _G =2.7Ω (Note3,4)	—	8.8	—	ns
Turn-On Rise Time	t _r		—	42	—	ns
Turn-Off Delay Time	t _{d(off)}		—	21.5	—	ns
Turn-Off Fall Time	t _f		—	5.4	—	ns
Total Gate Charge	Q _g	V _{DD} =30V,I _D =12A, V _{GS} =10V, (Note3,4)	—	18	—	nC
Gate-Source Charge	Q _{gs}		—	3.7	—	nC
Gate-Drain Charge	Q _{gd}		—	2.9	—	nC
Drain-Source Body Diode Charcteristics and Maximum Ratings						
Diode Forward Voltage	V _{SD}	I _S =1A,V _{GS} =0V	—	—	1.0	V
Reverse Recovery Time	t _{rr}	V _R =30V,I _F =12A,	—	78	—	ns
Reverse Recovery Charge	Q _{rr}	dI _F /dt=300A/us	—	192	—	nC

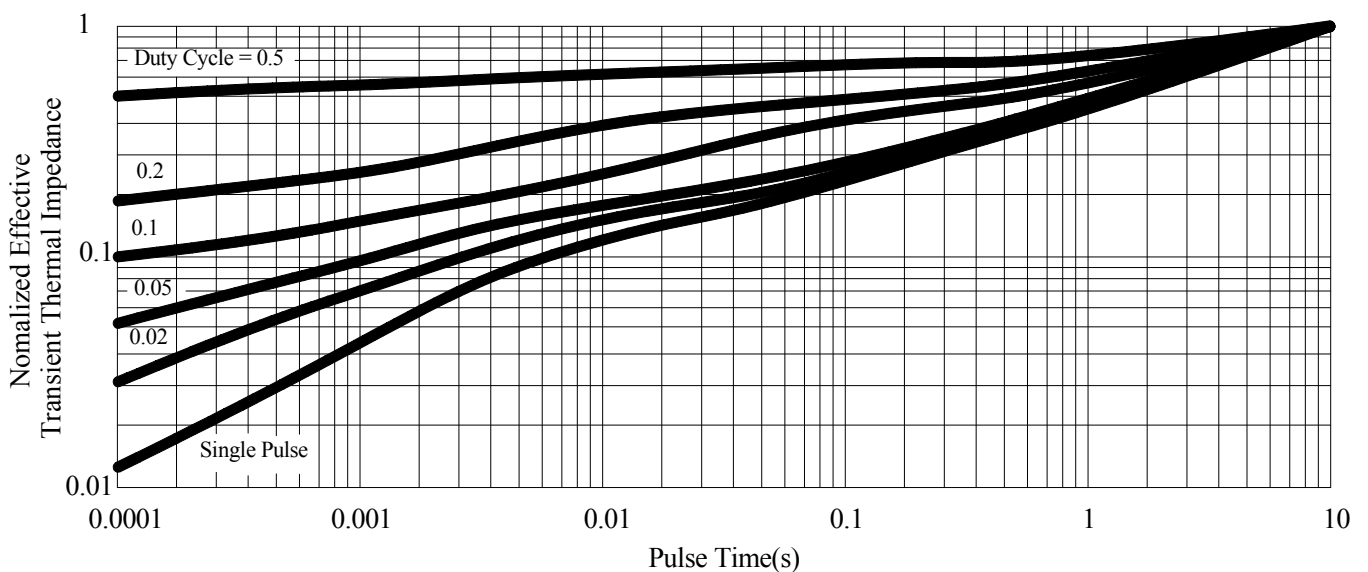
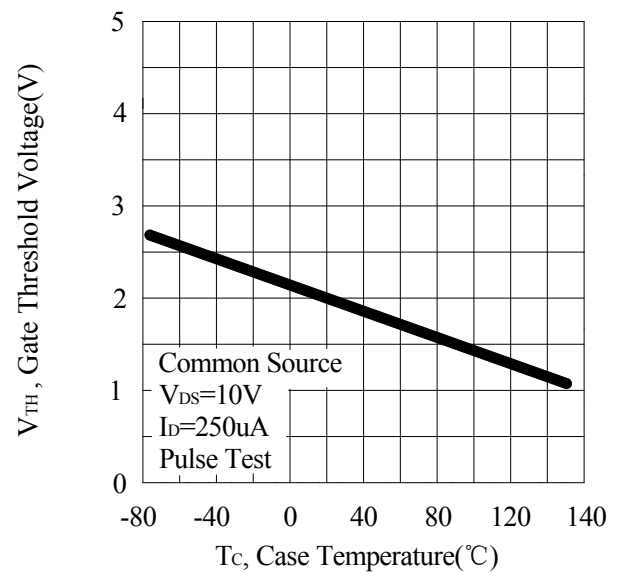
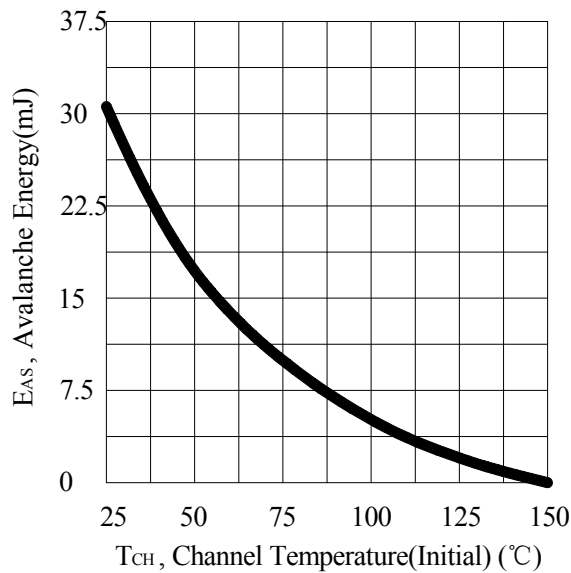
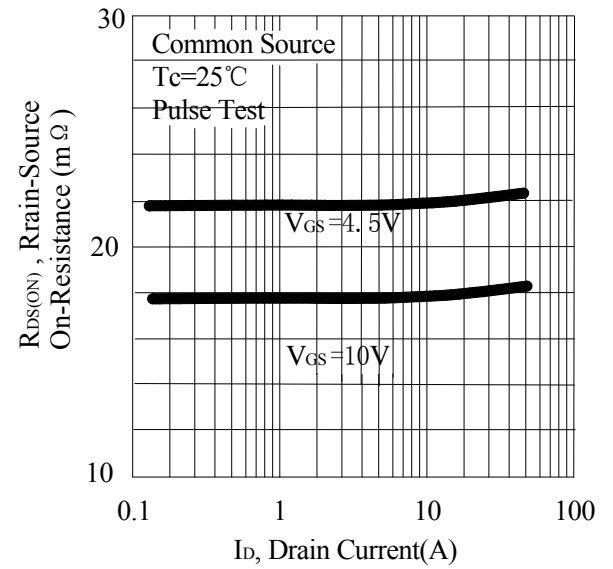
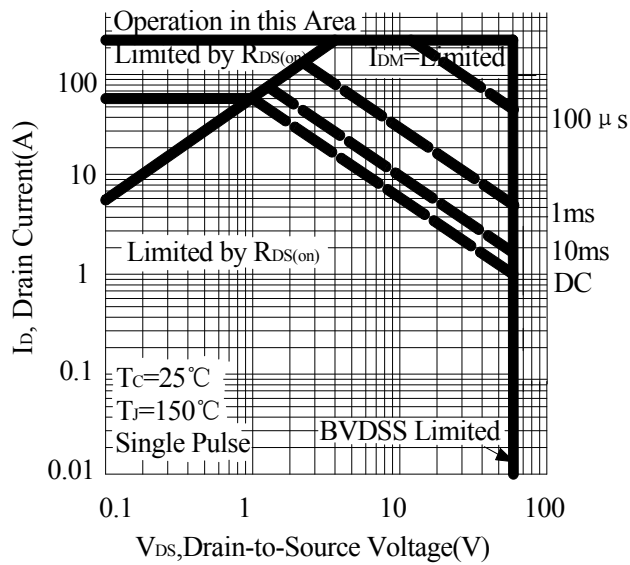
Notes

1. Repetitive Rating: pulse width limited by maximum junction temperature.
2. $V_{DD}=30V, L=0.3\text{mH}, R_g=10\Omega, I_{AS}=10A, T_J=25^{\circ}\text{C}$.
3. $I_{SD} \leq I_D, dI/dt=200A/\mu s, V_{DD} \leq BV_{DSS}$, starting $T_J=25^{\circ}\text{C}$, Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
4. Repetitive rating; pulse width limited by maximum junction temperature.


Peak Diode Recovery dv/dt Test Circuit

Peak Diode Recovery dv/dt Waveforms

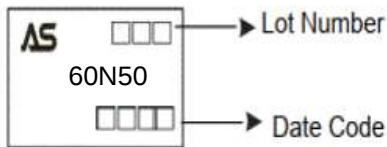

Switching Test Circuit

Switching Waveforms

Gate Charge Test Circuit

Gate Charge Waveform

Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms



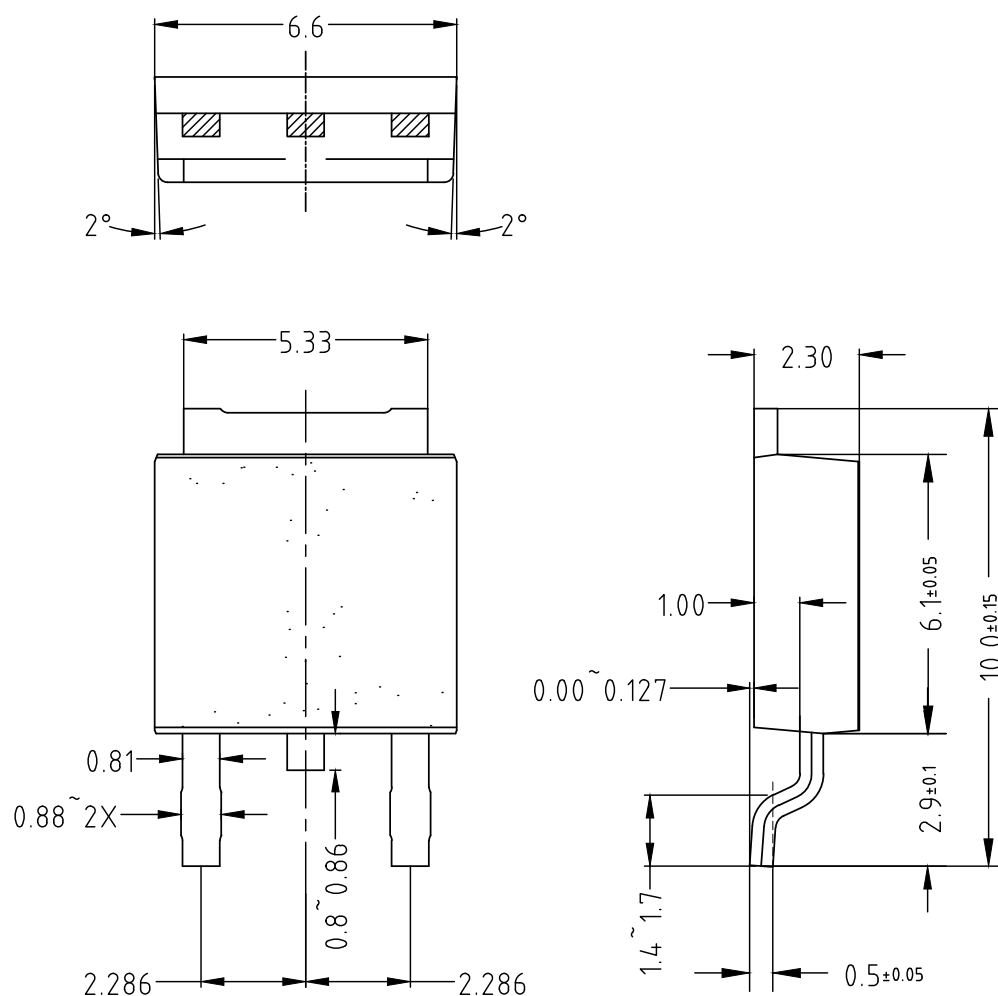


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM60N50KQ-R	60N50	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	 The diagram shows a TO-252 package with the following markings: - AS logo 60N50 - Lot Number (indicated by four squares) - Date Code (indicated by four squares)

TO-252



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