AT030SP060MTA

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	40mΩ@-10V	-30A
	50mΩ@-4.5V	

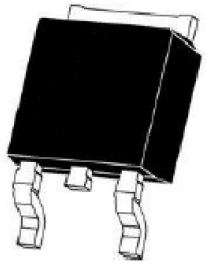
Feature

- Fast Switching
- Low Gate Charge and Rdson

Application

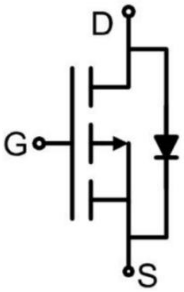
- DC-DC Converter
- Load switch

Package

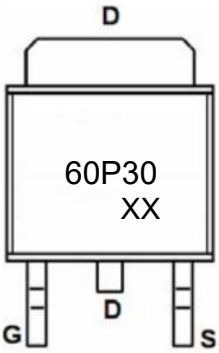


TO-252AB

Circuit diagram



Marking



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Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	-30	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	-20	A
Pulsed Drain Current	I_{DM}	-120	A
Single Pulse Avalanche Energy[1)]	E_{AS}	196	mJ
Power Dissipation (T_C=25℃)	P_D	55	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.27	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25℃, unless otherwise noted)

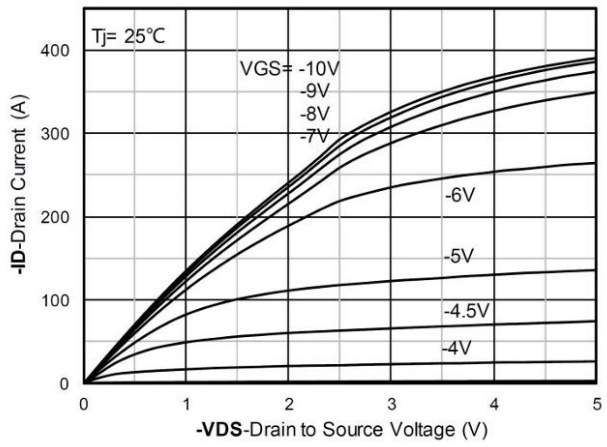
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =-250μA	-60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-48V, V_{GS} =0V, T_J =25℃			-1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.5	-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5A		30	40	mΩ
		V_{GS} =-4.5V, I_D =-4A		38	50	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =-30V, V_{GS} =0V, f =1MHz		2180		pF
Output Capacitance	C_{oss}			154		
Reverse Transfer Capacitance	C_{rss}			116		
Total Gate Charge	Q_g	V_{DS} =-30V, V_{GS} =-10V I_D =-6A		52		nC
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			10		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-30V, V_{GS} =-10V I_D =-6A, R_G =3Ω		12		nS
Turn-on rise time	t_r			6		
Turn-off delay time	$t_{d(off)}$			53		
Turn-off fall time	t_f			13		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-30	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-1A, T_J =25℃			-1.2	V
Reverse recover time	T_{rr}	I_S =-20A, di/dt =100A/us T_J =25℃		27		nS
Reverse recovery charge	Q_{rr}			58		nC

Notes:

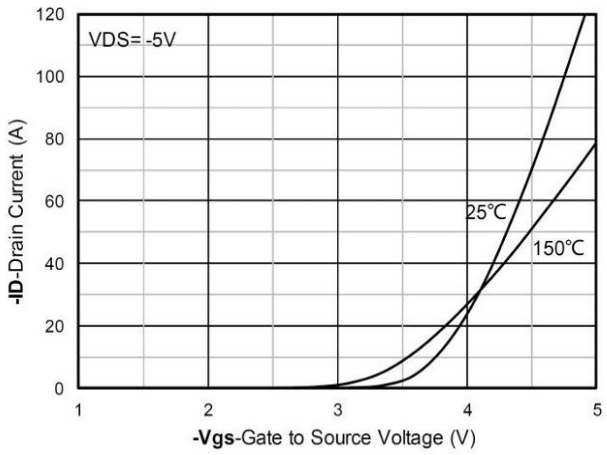
1) The EAS condition is V_{DD} =-30V, V_{GS} =-10V, L=0.5mH, R_G =25Ω.

2) Guaranteed by design, not subject to production testing.

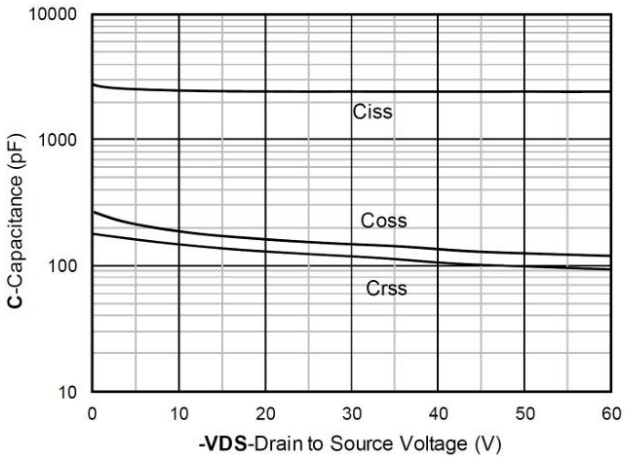
Typical Characteristics



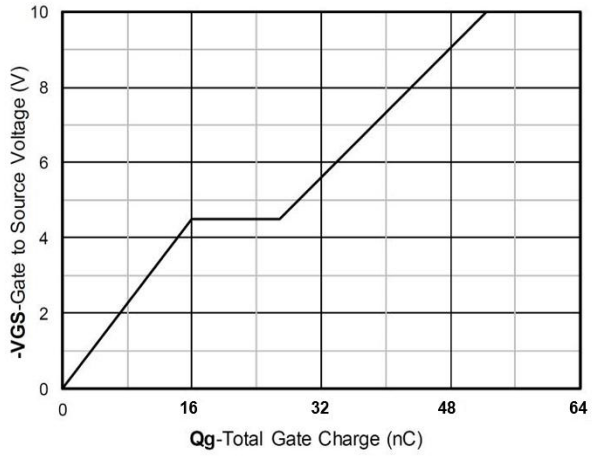
Output Characteristics



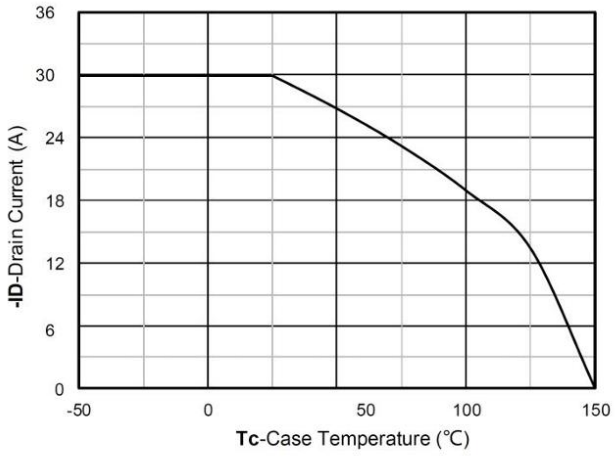
Transfer Characteristics



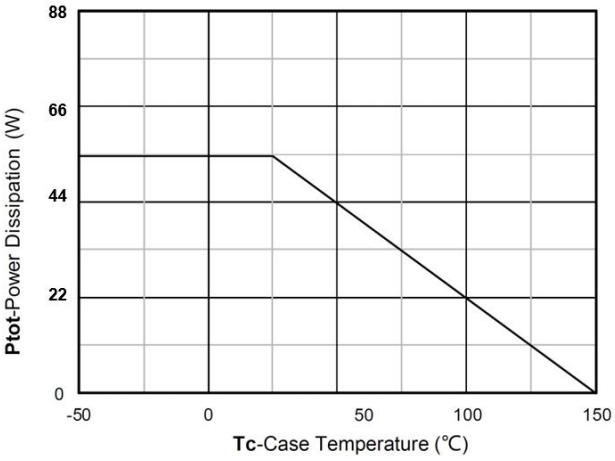
Capacitance Characteristics



Gate Charge

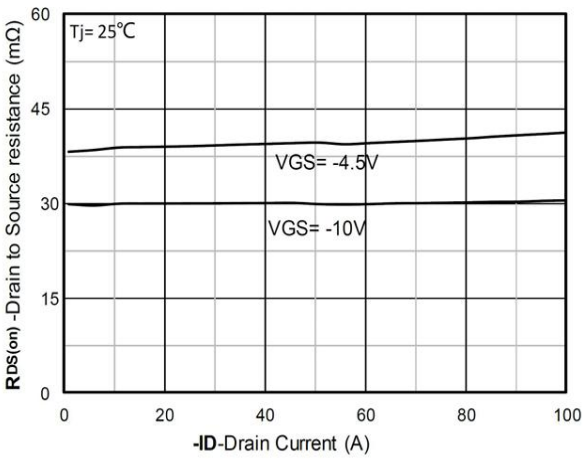


Current dissipation

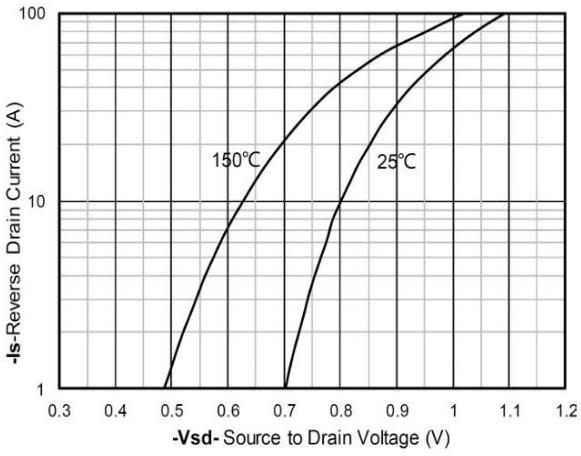


Power dissipation

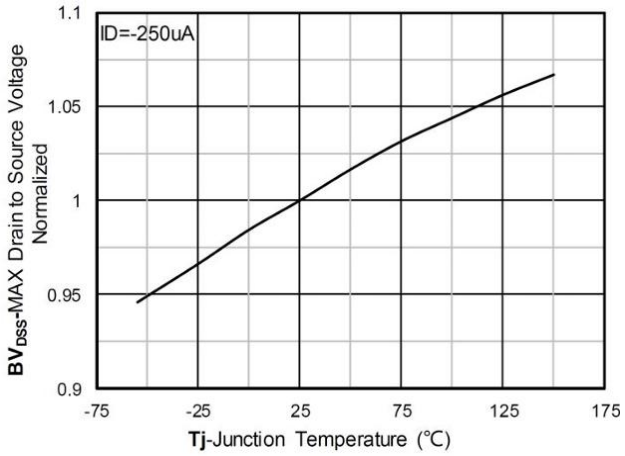
Typical Characteristics



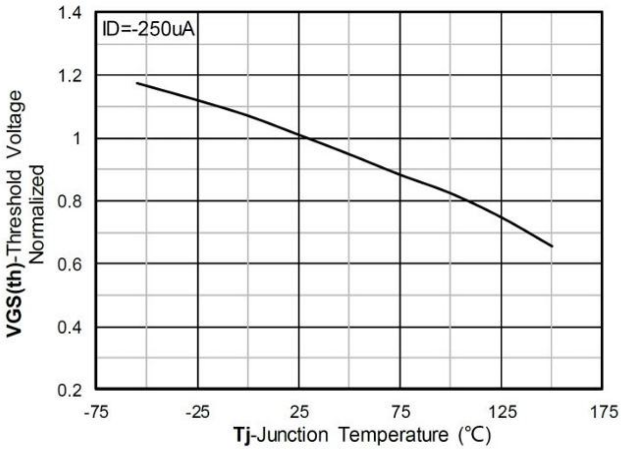
RDS(on) VS Drain Current



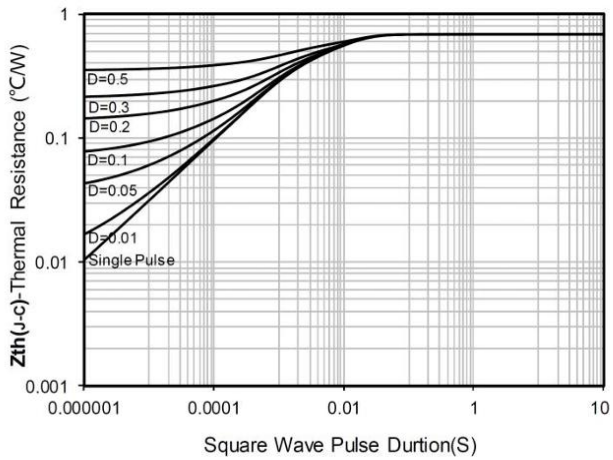
Forward characteristics of reverse diode



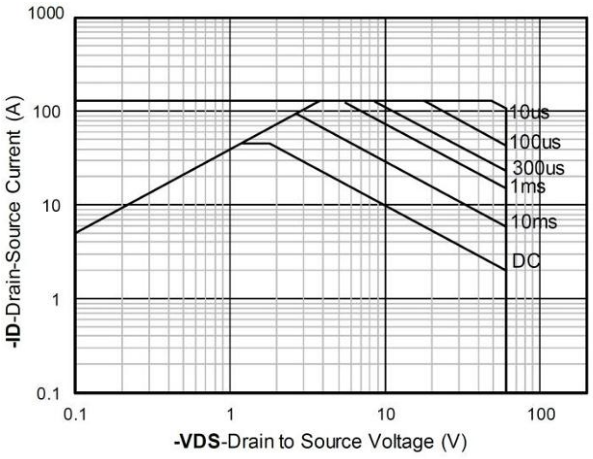
Normalized breakdown voltage



Normalized Threshold voltage

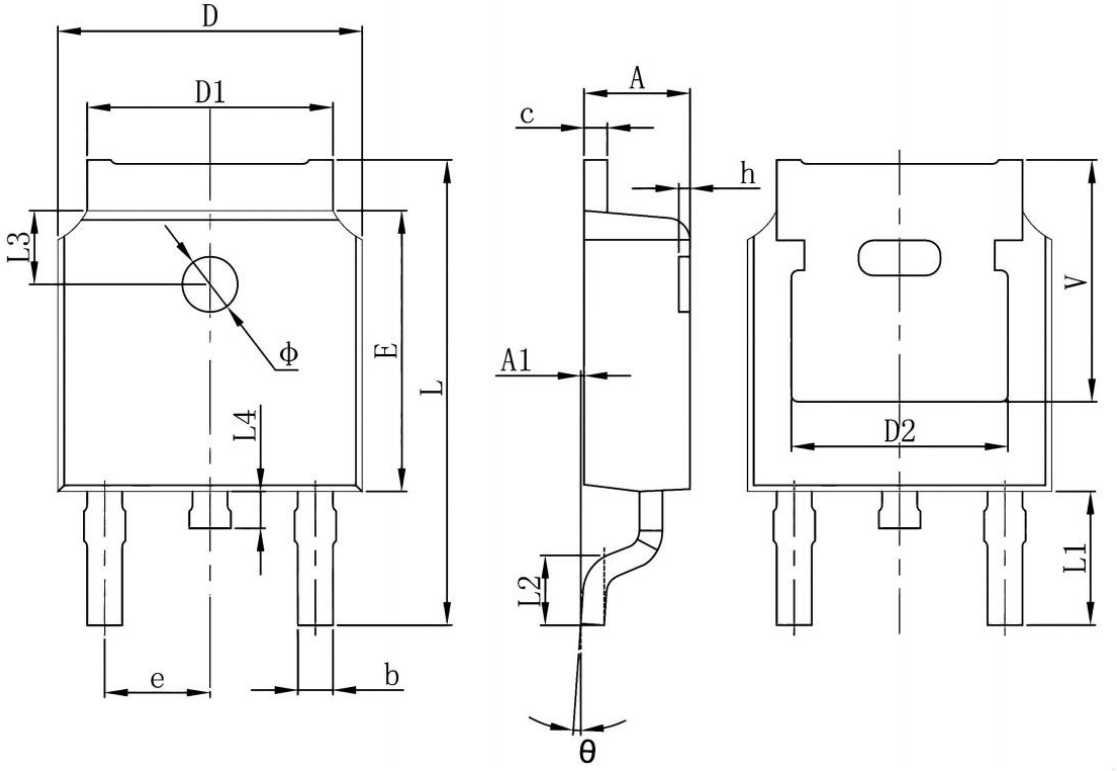


Maximum Transient Thermal Impedance



Safe Operation Area

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	