

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	8mΩ@-10V	-60A
	13mΩ@-4.5V	

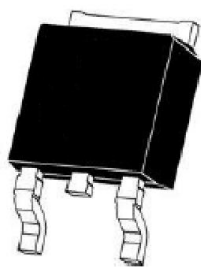
Feature

- Fast Switching
- Low Gate Charge and Rdson

Application

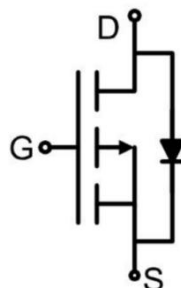
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

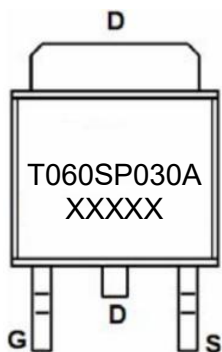


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	-60	A
Continuous Drain Current ($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	-40	A
Pulsed Drain Current	I_{DM}	-240	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	450	mJ
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	55	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.3	$^\circ\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

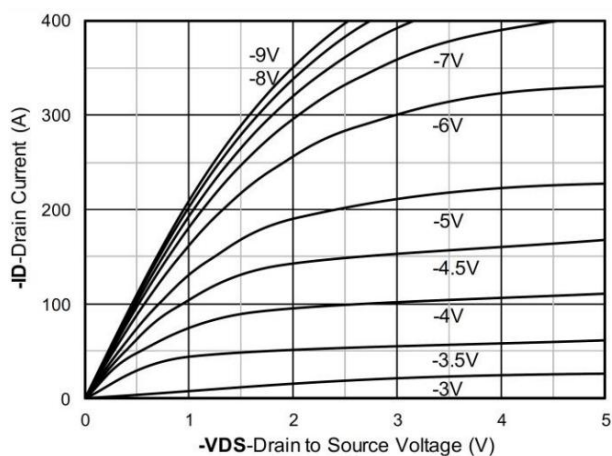
Electrical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V, T_J=25^{\circ}C$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.5	-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$		6	8	m Ω
		$V_{GS}=-4.5V, I_D=-15A$		9	13	
Dynamic characteristics ²⁾						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		3456		pF
Output Capacitance	C_{oss}			387		
Reverse Transfer Capacitance	C_{rss}			335		
Total Gate Charge	Q_g	$V_{DS}=-15V, V_{GS}=-10V$ $I_D=-20A$		62		nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			14		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=-15V, V_{GS}=-10V$ $I_D=-20A, R_G=3\Omega$		15		nS
Turn-on rise time	t_r			61		
Turn-off delay time	$t_{d(off)}$			54		
Turn-off fall time	t_f			65		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-60	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=-1A, T_J=25^{\circ}C$			-1.2	V
Reverse recover time	T_{rr}	$I_S=-20A, di/dt=-100A/us$ $T_J=25^{\circ}C$		25		nS
Reverse recovery charge	Q_{rr}			12		nC

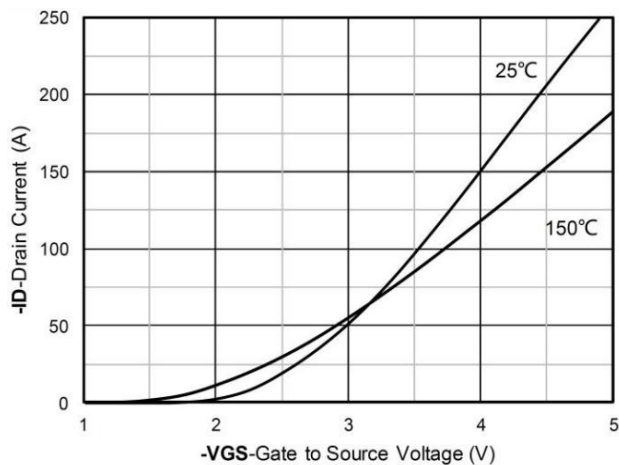
Notes:

- 1) The EAS condition is $V_{DD}=-15V, V_{GS}=-10V, L=0.5\text{mH}, R_G=25\Omega$.
- 2) Guaranteed by design, not subject to production testing.

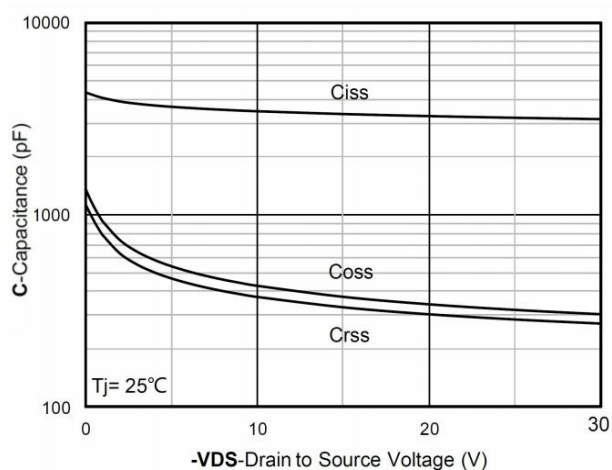
Typical Characteristics



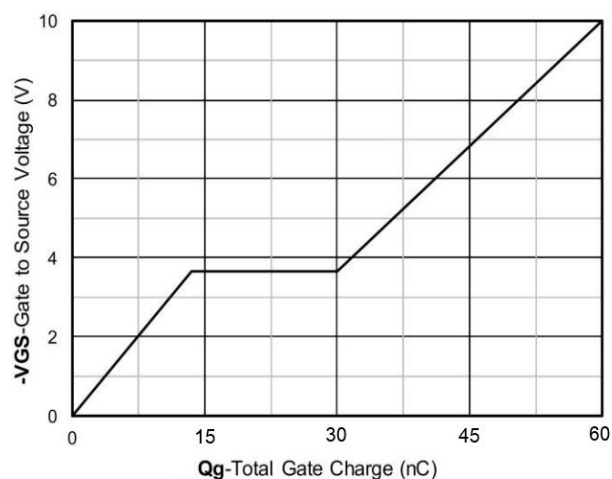
Output Characteristics



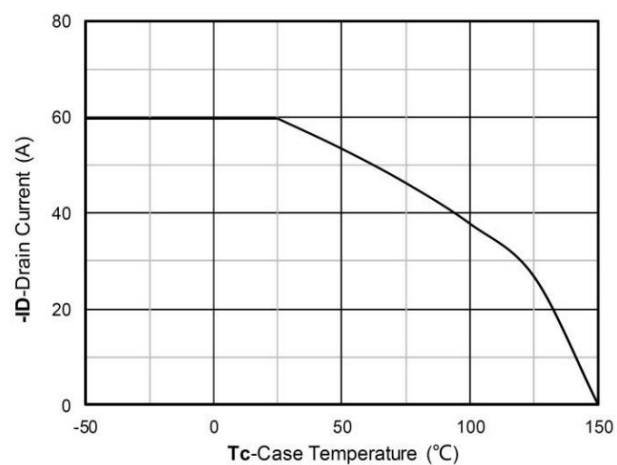
Transfer Characteristics



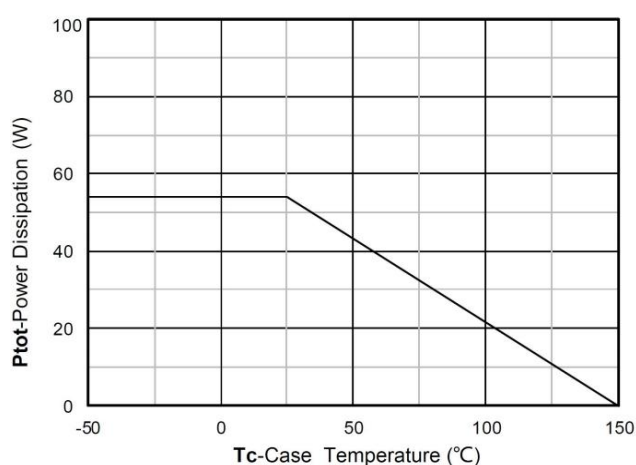
Capacitance Characteristics



Gate Charge

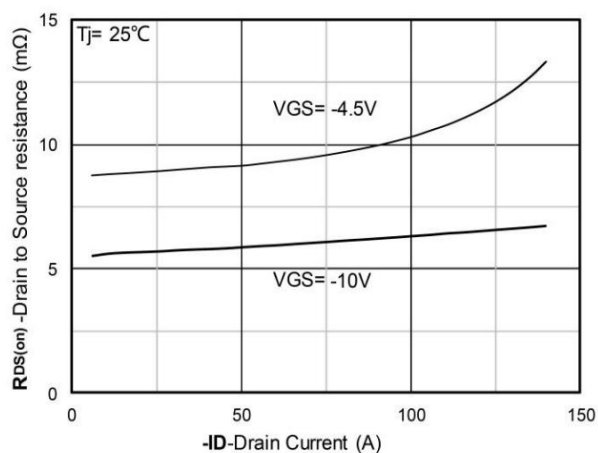


Current dissipation

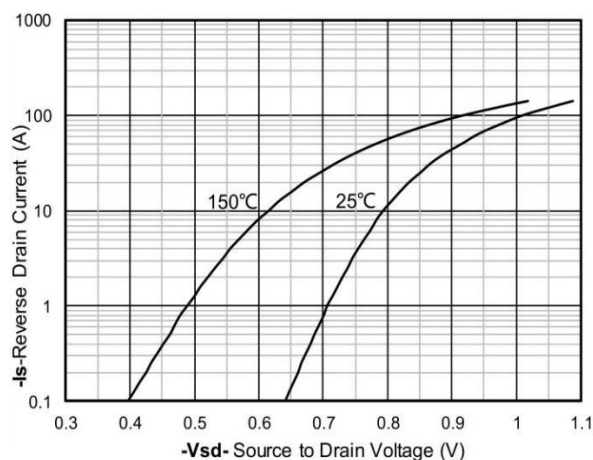


Power dissipation

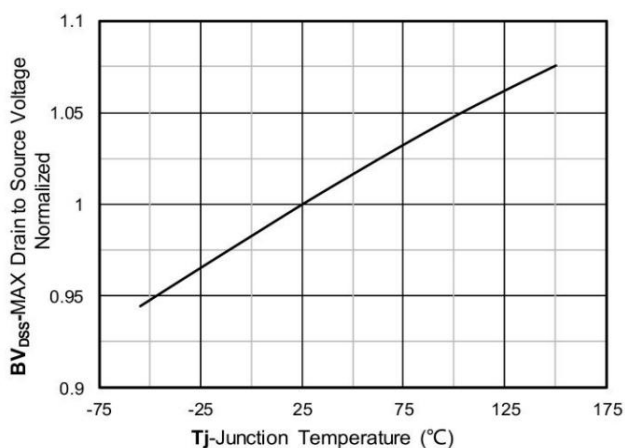
Typical Characteristics



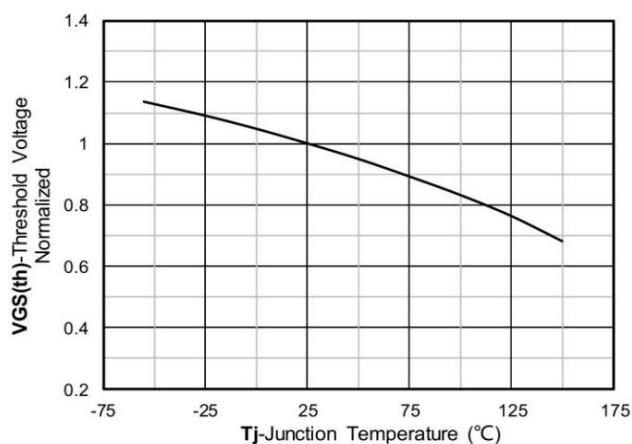
$R_{DS(on)}$ VS Drain Current



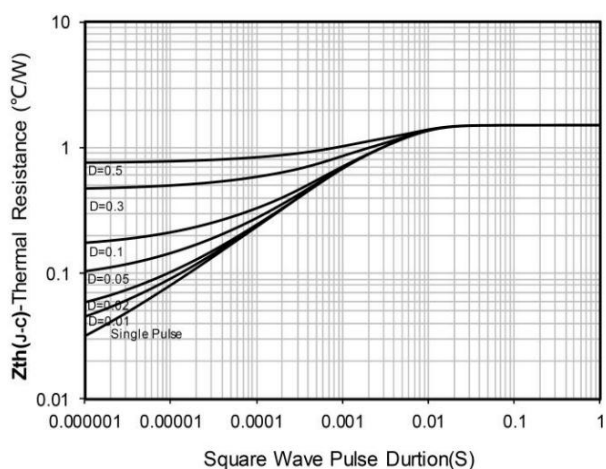
Forward characteristics of reverse diode



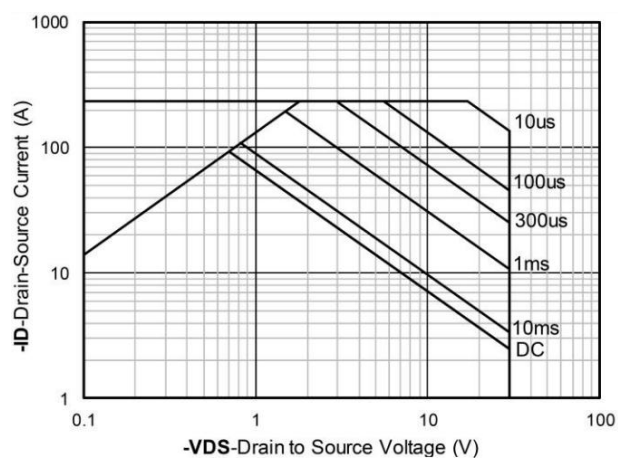
Normalized breakdown voltage



Normalized Threshold voltage

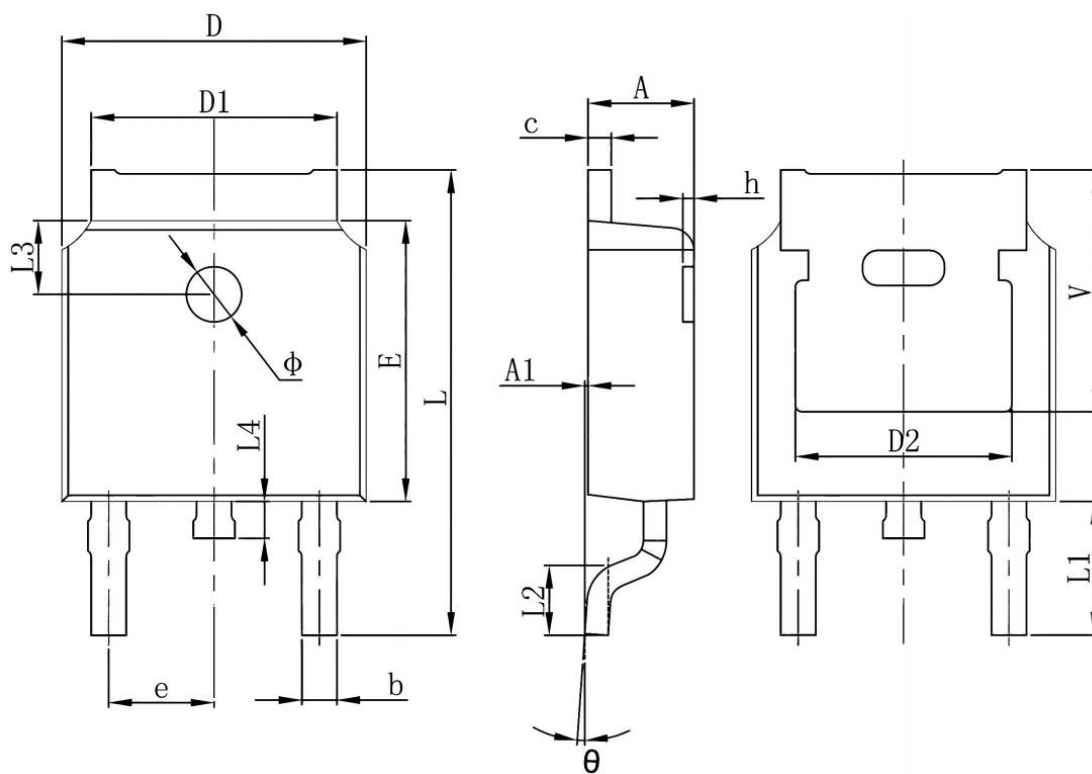


Maximum Transient Thermal Impedance



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.	