

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_b
40V	8mΩ@10V	70A
	12mΩ@4.5V	

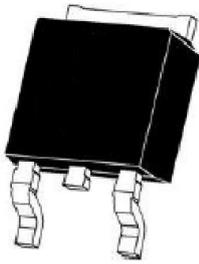
Feature

- Fast Switching
- Low Gate Charge and Rdson

Application

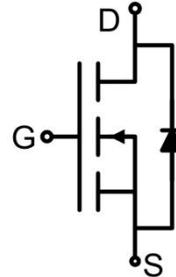
- DC-DC Converter
- Load Switching

Package

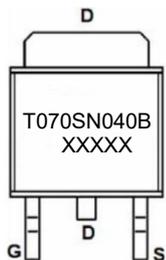


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	70	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	47	A
Pulsed Drain Current	I _{DM}	280	A
Single Pulse Avalanche Energy ¹⁾	E _{AS}	145	mJ
Power Dissipation (T _C =25°C)	P _D	60	W
Thermal Resistance Junction to Case	R _{θJC}	2.1	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

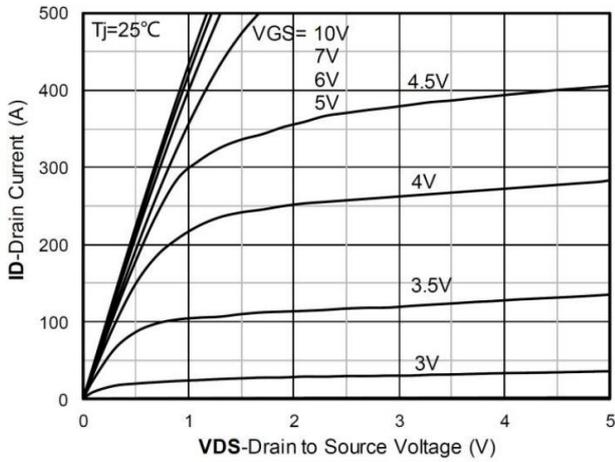
Electrical characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V, T _J = 25°C			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 = 12A		6	8	mΩ
		V _{GS} = 4.5V, I _D = 10A		8	12	
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		2450		pF
Output Capacitance	C _{oss}			168		
Reverse Transfer Capacitance	C _{rss}			135		
Total Gate Charge	Q _g	V _{DS} = 20V, V _{GS} = 10V, I _D = 20A		45		nC
Gate-Source Charge	Q _{gs}			11		
Gate-Drain Charge	Q _{gd}			11		
Turn-on delay time	t _{d(on)}	V _{DS} = 20V, V _{GS} = 10V, I _D = 20A R _G = 3Ω		11		nS
Turn-on rise time	t _r			29		
Turn-off delay time	t _{d(off)}			42		
Turn-off fall time	t _f			7		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				70	A
Diode Forward voltage	V _{SD}	V _{GS} = 0V, I _S = 1A, T _J = 25°C			1.2	V
Reverse recover time	T _{rr}	I _F = 20A, di/dt = -100A/us T _J = 25°C		12		nS
Reverse recovery charge	Q _{rr}			7		nC

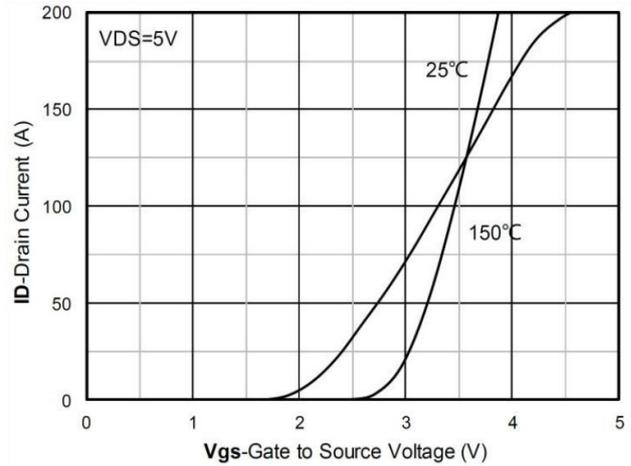
Notes:

- 1) The EAS test condition is V_{DD} = 20V, V_{GS} = 10V, L = 0.1mH, R_G = 25Ω.
- 2) Guaranteed by design, not subject to production.

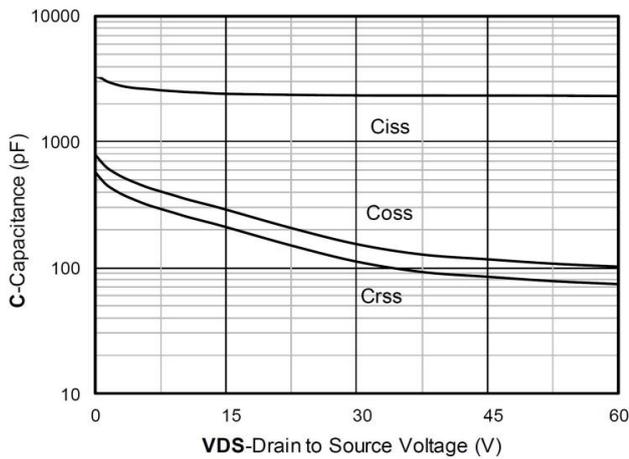
Typical Characteristics



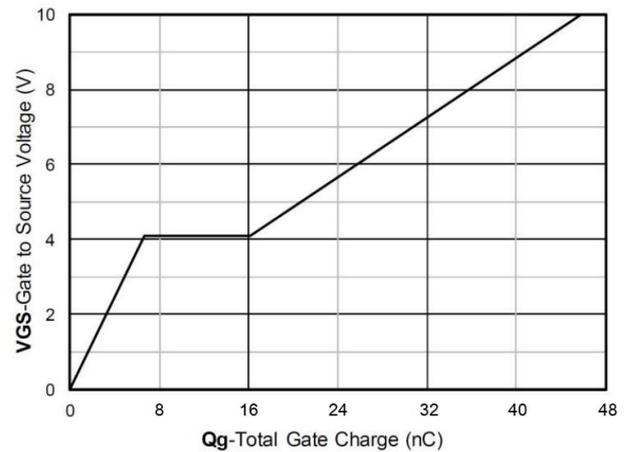
Output Characteristics



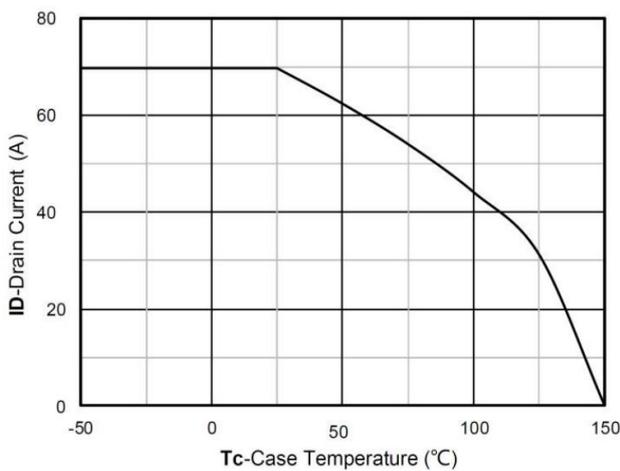
Transfer Characteristics



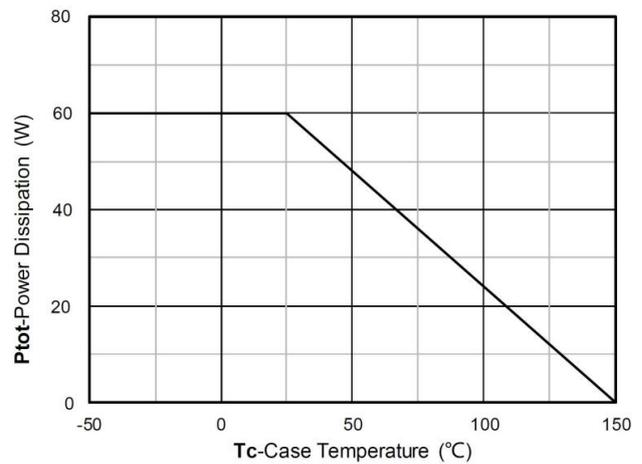
Capacitance Characteristics



Gate Charge

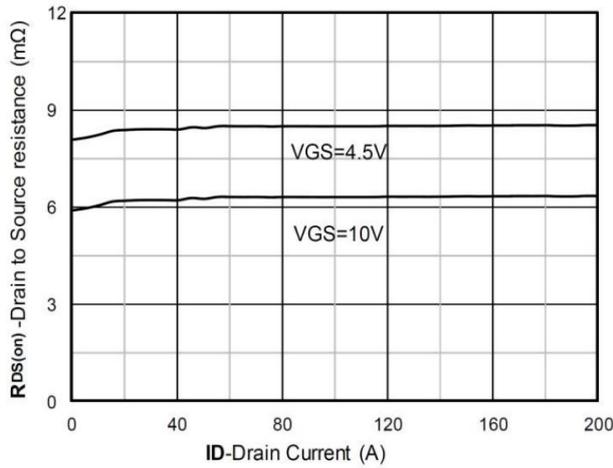


Current dissipation

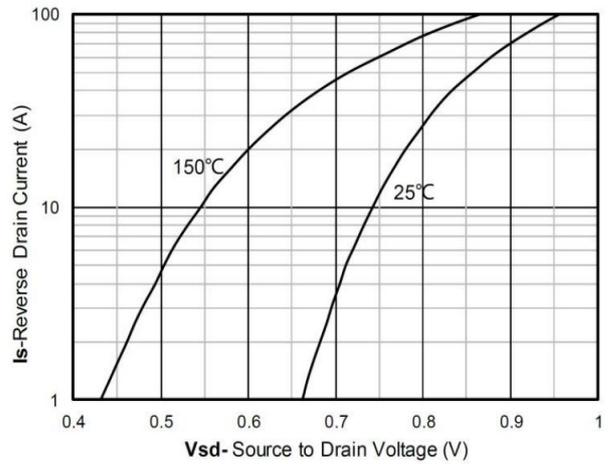


Power dissipation

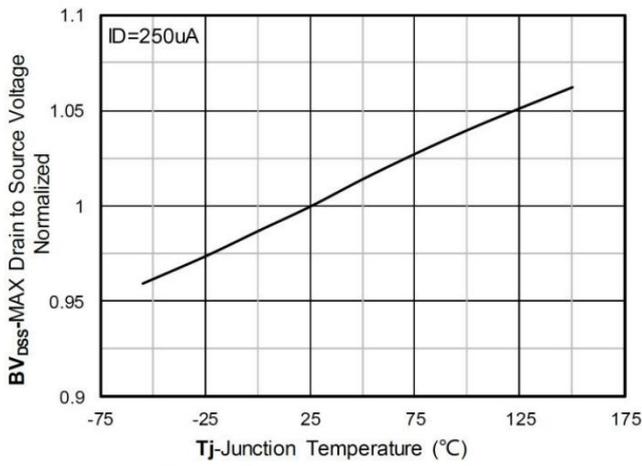
Typical Characteristics



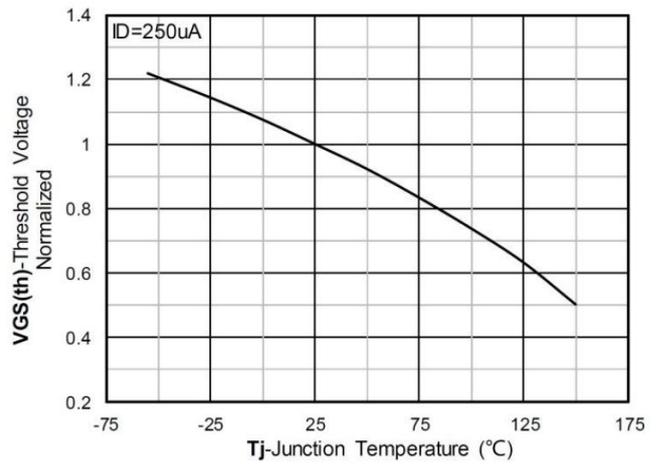
RDS(on) VS Drain Current



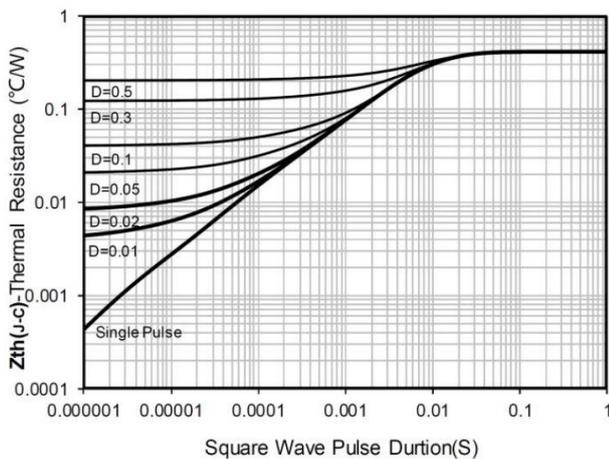
Forward characteristics of reverse diode



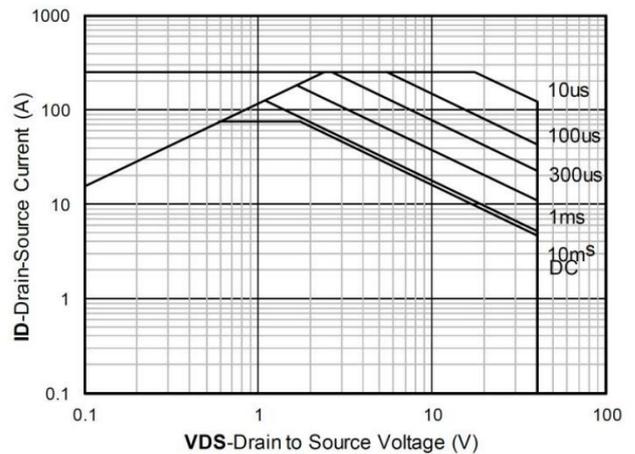
Normalized breakdown voltage



Normalized Threshold voltage

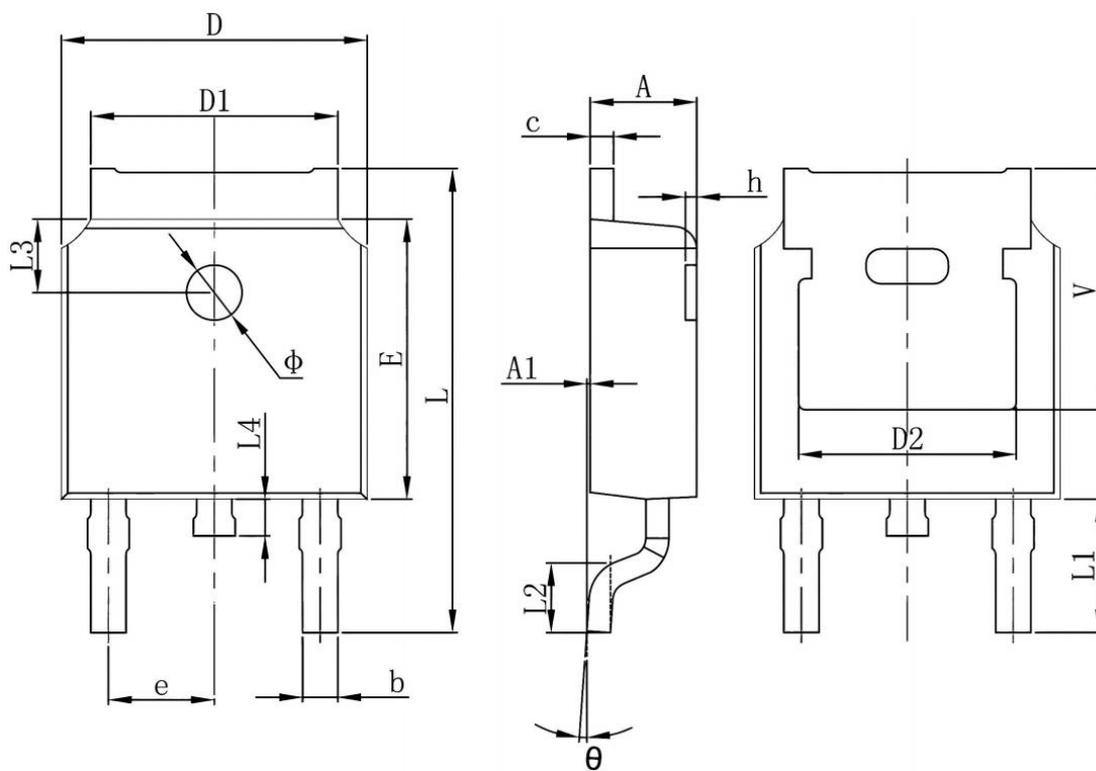


Maximum Transient Thermal Impedance



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.	