

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-40V	11.5mΩ@-10V	-45A
	18mΩ@-4.5V	

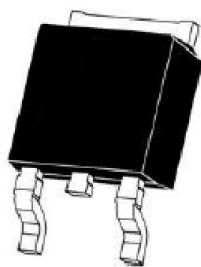
Feature

- Fast switching
- Low gate charge and $R_{DS(on)}$

Application

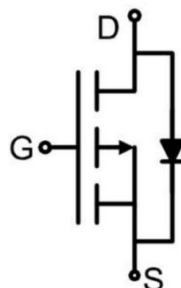
- DC-DC Converter
- Load switching

Package

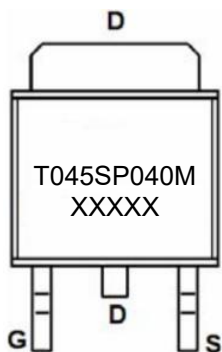


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	-45	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	-30	A
Pulsed Drain Current	I_{DM}	-180	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	169	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	85	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.47	$^{\circ}\text{C/W}$
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)

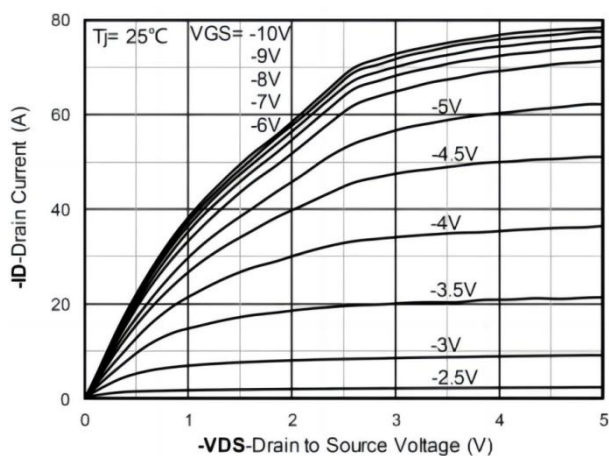
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-40			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-32V, V _{GS} =0V, T _J =25℃			-1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.2	-1.6	-2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-10A		8.9	11.5	mΩ
		V _{GS} =-4.5V, I _D =-8A		13	18	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f =1MHz		3800		pF
Output Capacitance	C _{oss}			329		
Reverse Transfer Capacitance	C _{rss}			289		
Total Gate Charge	Q _g	V _{DS} =-20V, V _{GS} =-10V I _D =-20A		69		nC
Gate-Source Charge	Q _{gs}			11		
Gate-Drain Charge	Q _{gd}			13		
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			81		
Turn-off delay time	t _{d(off)}			95		
Turn-off fall time	t _f			73		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-45	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25℃			-1.2	V
Reverse Recovery Time	T _{rr}	I _S =-20A, di/dt =100A/μs T _J =25℃		21		nS
Reverse Recovery Charge	Q _{rr}			12		nC

Notes:

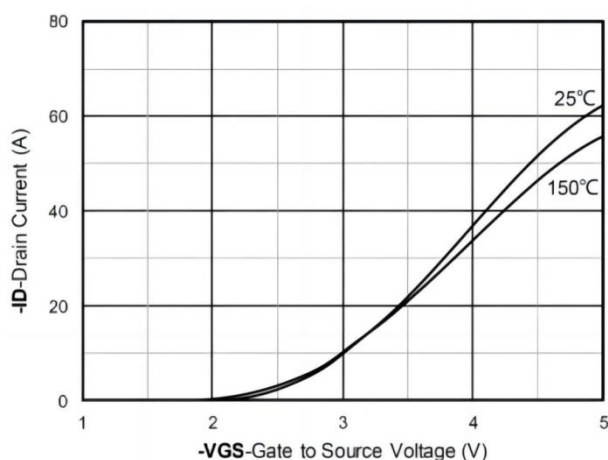
1) The EAS test condition is $V_{DD}=-20V, V_{GS}=-10V, L=0.5mH, R_G=25\Omega$.

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

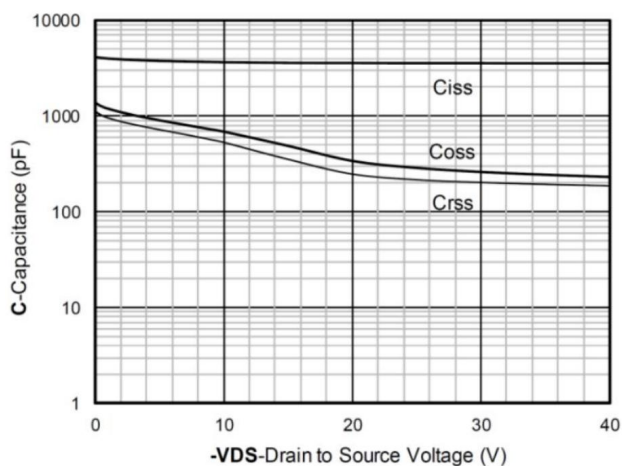
Typical Characteristics



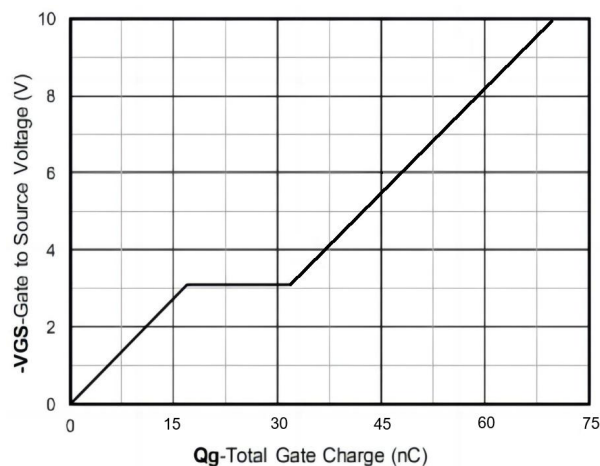
Output Characteristics



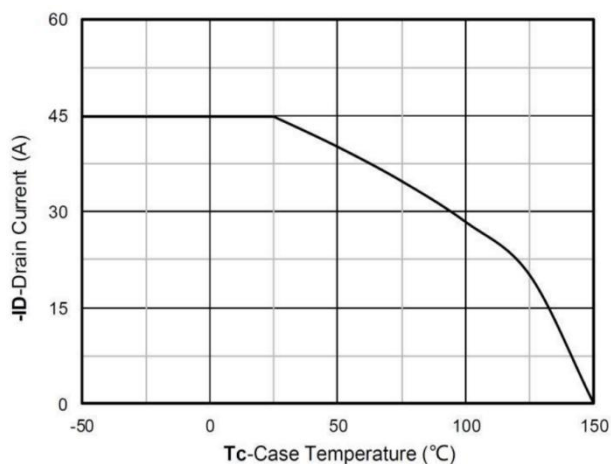
Transfer Characteristics



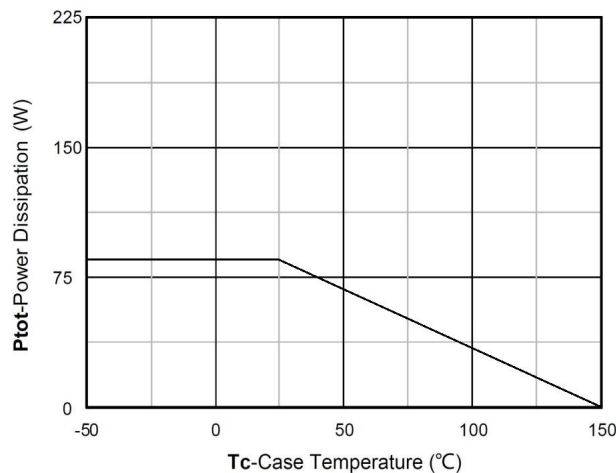
Capacitance Characteristics



Gate Charge

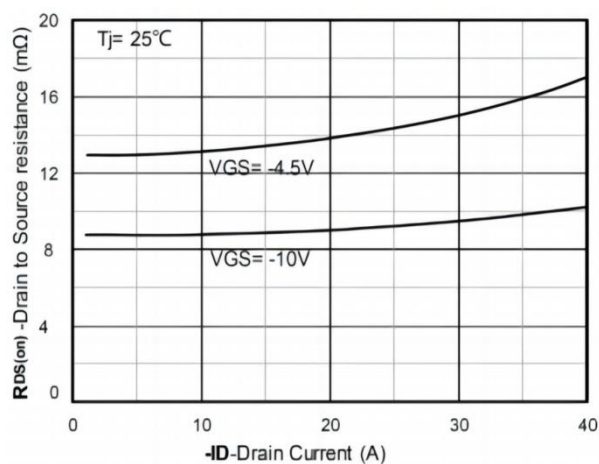


Current dissipation

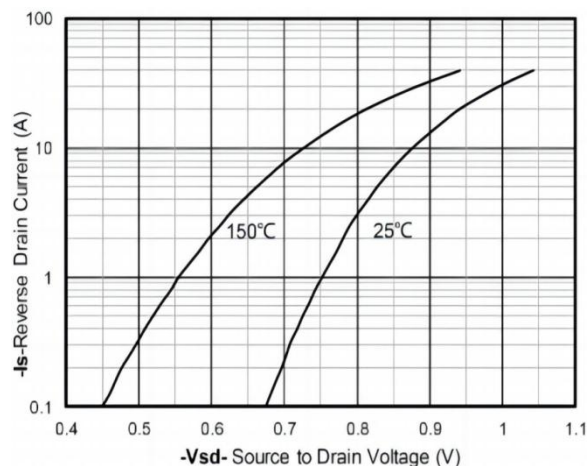


Power dissipation

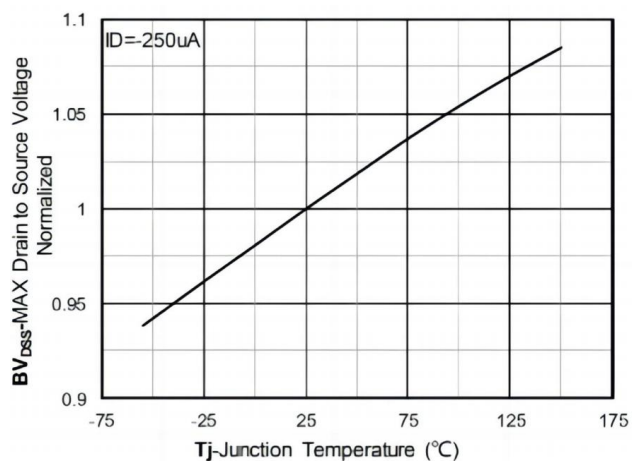
Typical Characteristics



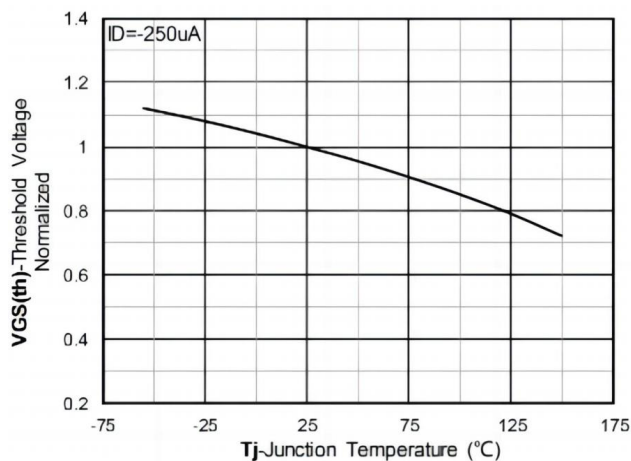
$R_{DS(on)}$ VS Drain Current



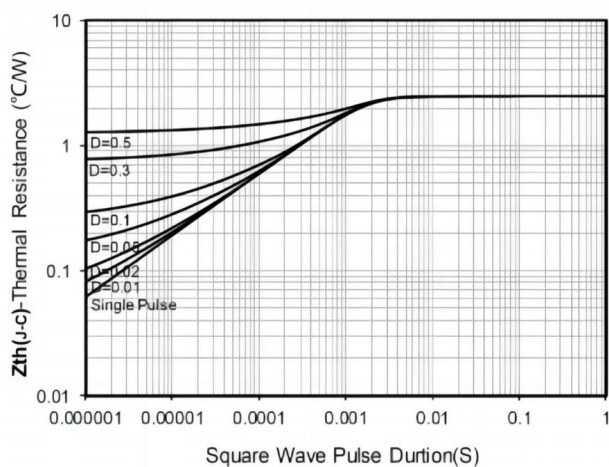
Forward characteristics of reverse diode



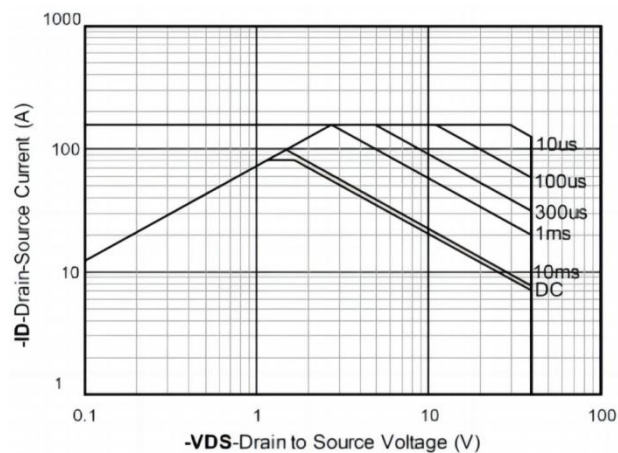
Normalized breakdown voltage



Normalized Threshold voltage

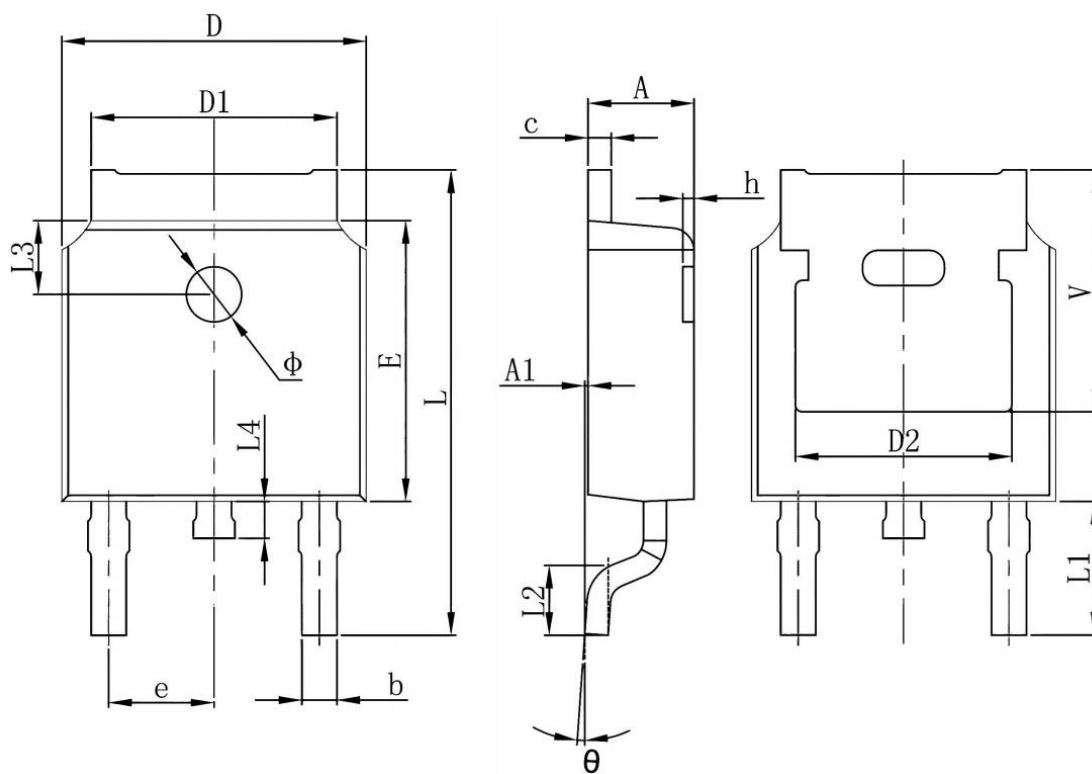


Maximum Transient Thermal Impedance



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
phi	1.100	1.300	0.043	0.051
theta	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	