

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	5mΩ@10V	110A
	6mΩ@4.5V	

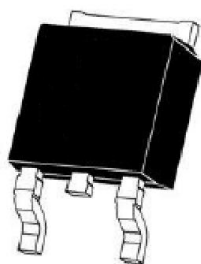
Feature

- Excellent gate charge x $R_{DS(on)}$ product
- Very low on-resistance $R_{DS(on)}$
- Pb-free lead plating

Application

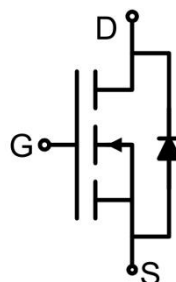
- DC/DC Converter
- Power switching application
- Uninterruptible power supply

Package

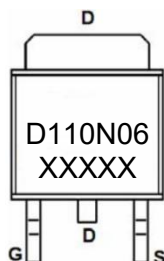


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current($T_C = 25^\circ\text{C}$)	I_D	110	A
Drain Current-Continuous($T_C = 100^\circ\text{C}$)	I_D	70	A
Pulsed Drain Current ¹⁾	I_{DM}	450	A
Power Dissipation($T_C = 25^\circ\text{C}$) ²⁾	P_D	80	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$
Single pulse avalanche energy	E_{AS}	722	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	2.5	4	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 55A$		3.5	5.0	m Ω
		$V_{GS} = 6V, I_D = 20A$		4.2	6.0	
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		4150		pF
Output Capacitance	C_{oss}			1050		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 55A$		80		nC
Gate-Source Charge	Q_{gs}			22		
Gate-Drain Charge	Q_{gd}			12		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 55A, R_{GEN} = 2.2\Omega$		25		nS
Turn-on rise time	t_r			9		
Turn-off delay time	$t_{d(off)}$			65		
Turn-off fall time	t_f			25		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				110	A
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 55A$			1.2	V
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}C, I_F = 55A$		70		nS
Reverse Recovery Charge	Q_{rr}	$di/dt = 100A/\mu s$		80		nC

Notes:

1) Repetitive rating; pulse width limited by max. junction temperature.

2) P_D is based on max. junction temperature, using $\leq 10s$ junction-ambient thermal resistance.

Typical Characteristics

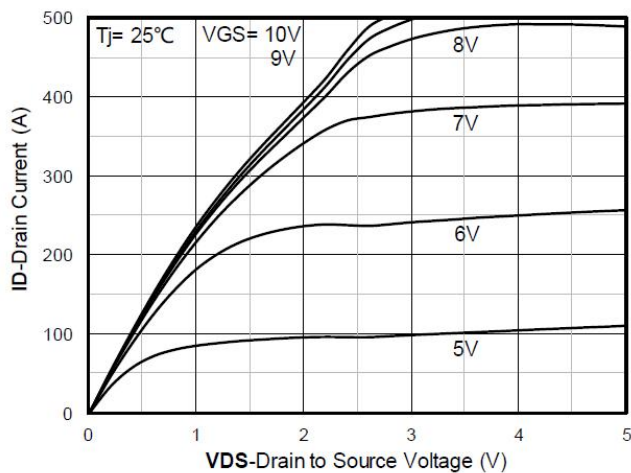


Figure 1. Output Characteristics

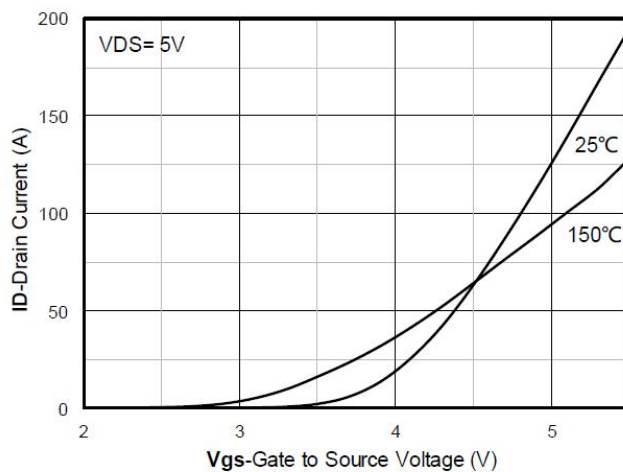


Figure 2. Transfer Characteristics

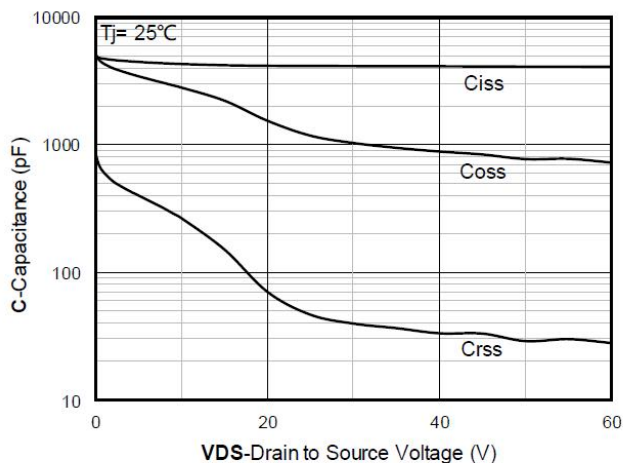


Figure 3. Capacitance Characteristics

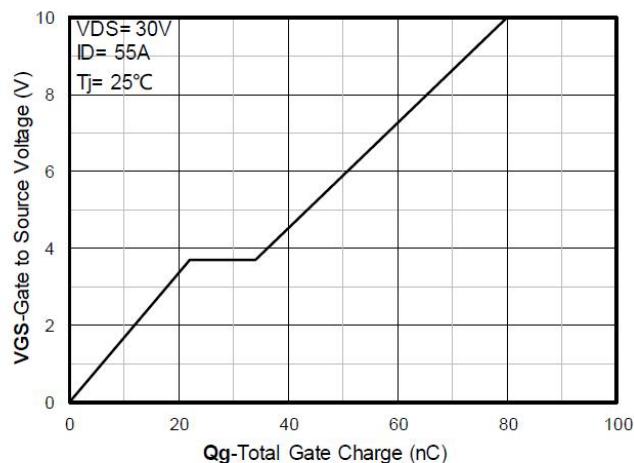


Figure 4. Gate Charge

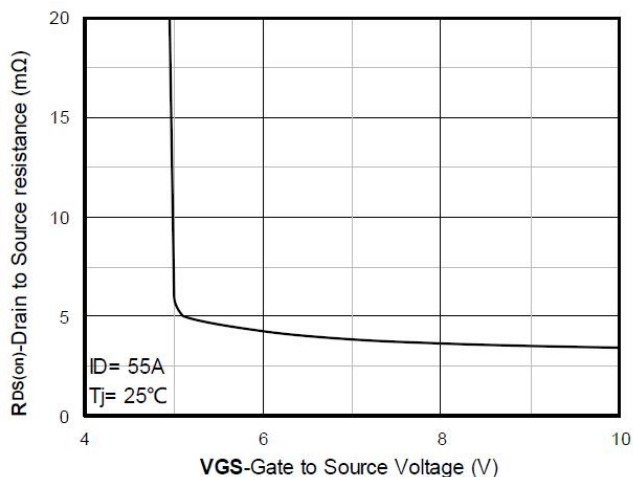


Figure 5. On-Resistance vs Gate to Source Voltage

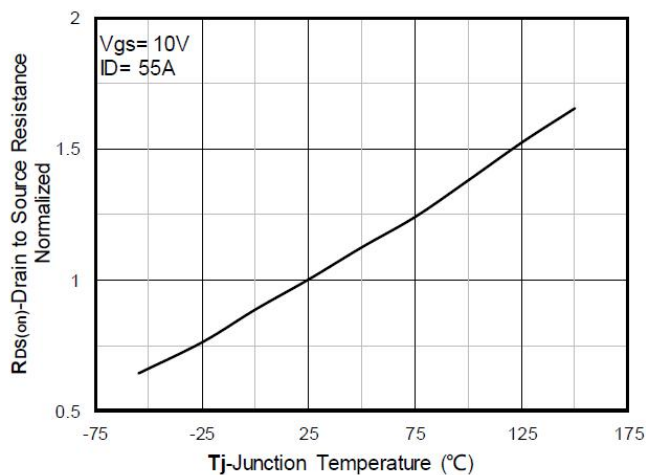


Figure 6. Normalized On-Resistance

Typical Characteristics

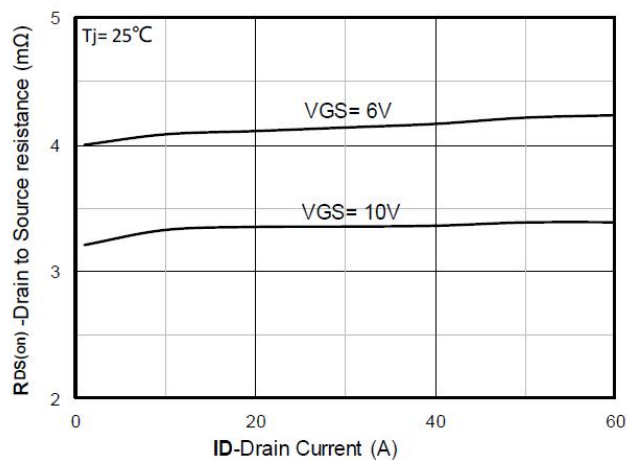


Figure 7. $R_{DS(on)}$ VS Drain Current

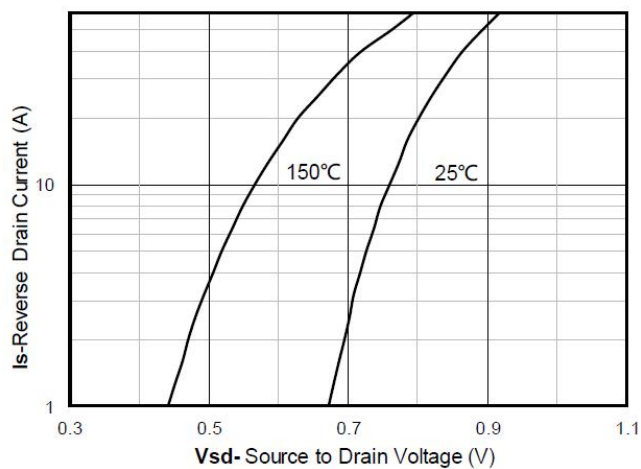


Figure 8. Forward characteristics of reverse diode

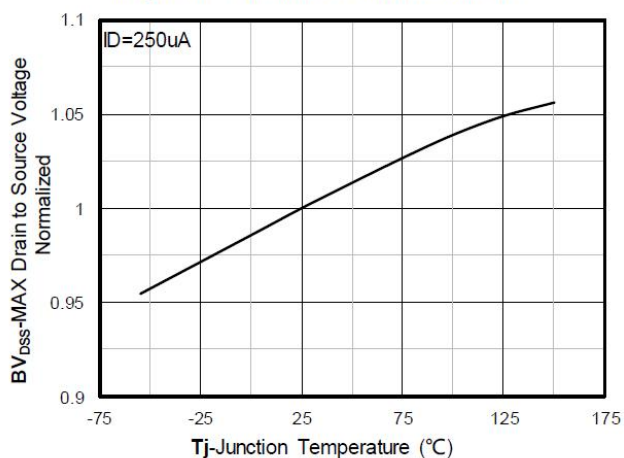


Figure 9. Normalized breakdown voltage

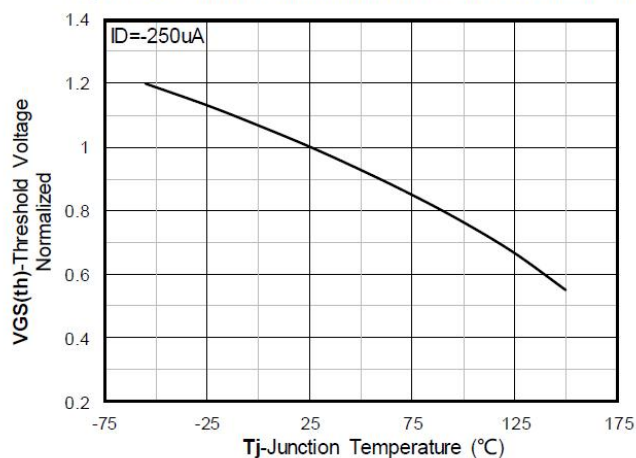


Figure 10. Normalized Threshold voltage

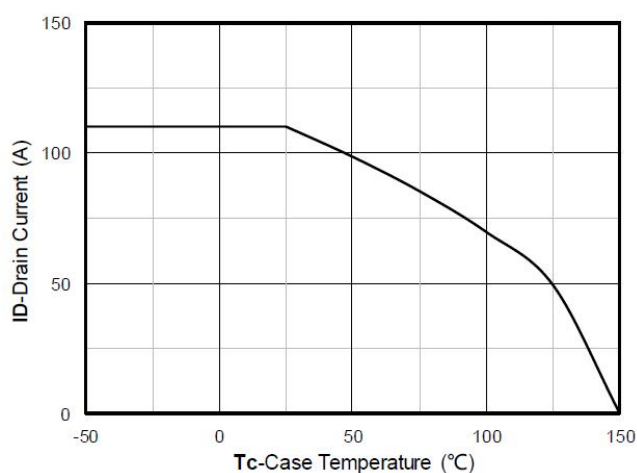


Figure 11. Current dissipation

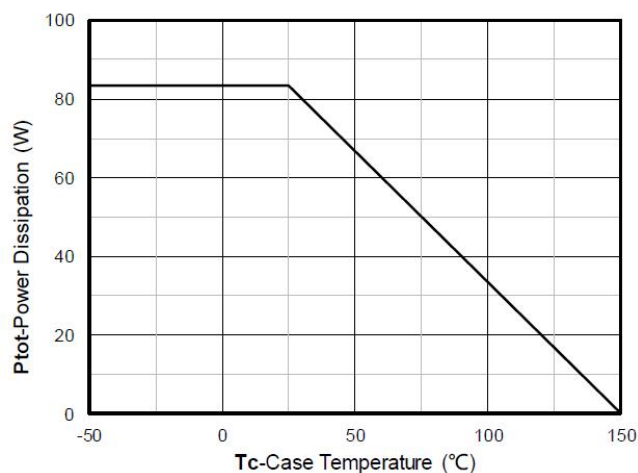


Figure 12. Power dissipation

Typical Characteristics

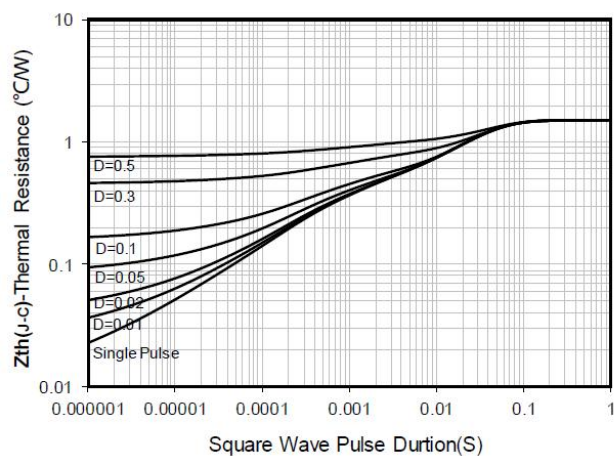


Figure 13. Maximum Transient Thermal Impedance

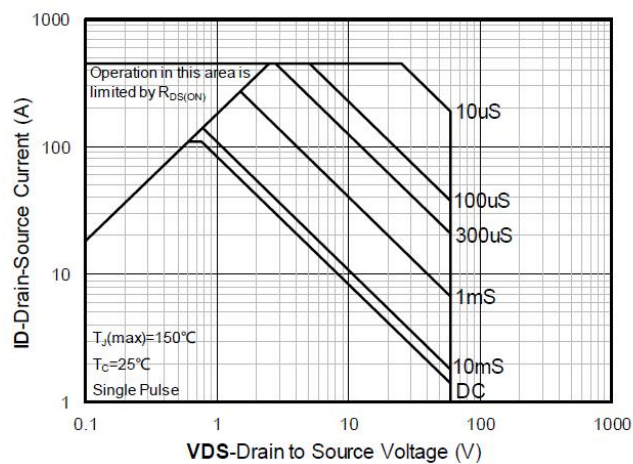
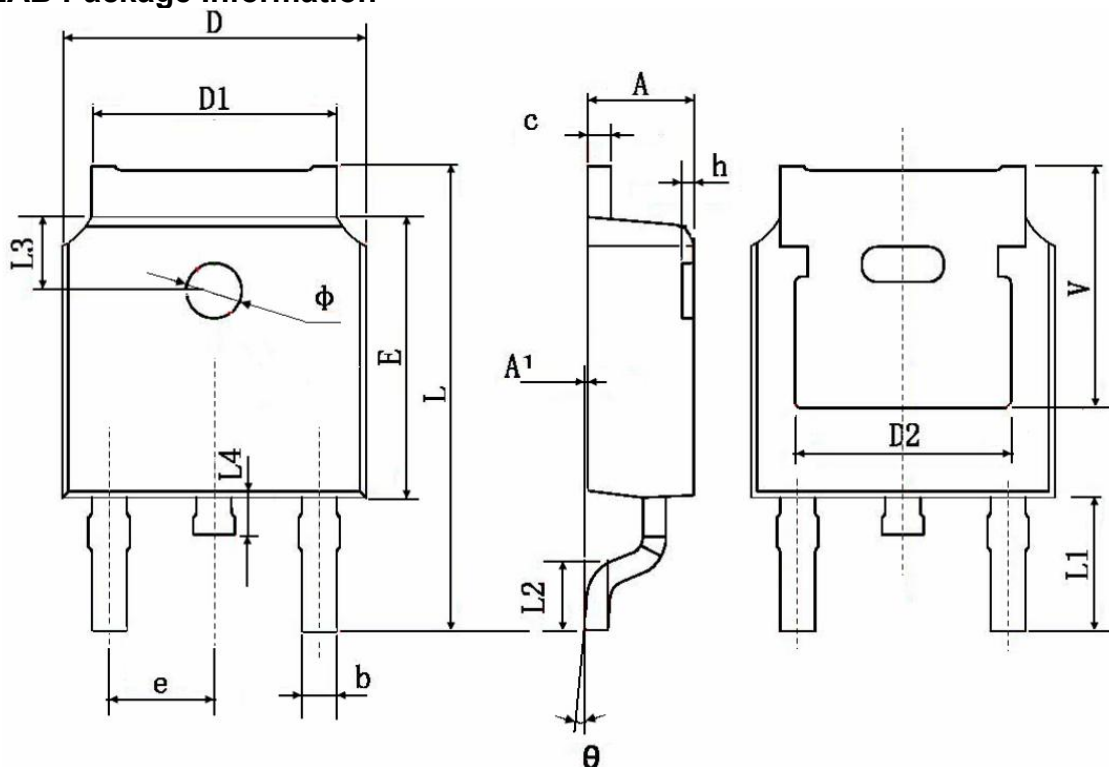


Figure 14. Safe Operation Area

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 TYP.		0.190 TYP.	
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 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
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 TYP.		0.211 TYP.	