

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_b
100V	23mΩ@10V	35A
	27mΩ@4.5V	

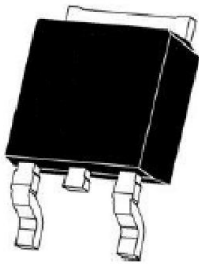
Feature

- Excellent gate charge and $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$

Application

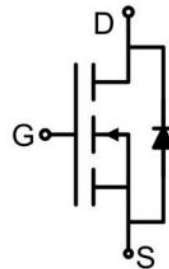
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

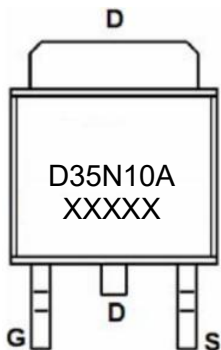


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage,DC	V_{GS}	±20	V
Continuous Drain Current	I_D	35	A
Continuous Drain Current(Tc =100°C)	$I_D(100^\circ\text{C})$	24.7	A
Pulsed Drain Current	I_{DM}	180	A
Power Dissipation	P_D	110	W
Derating factor		0.73	W/°C
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.36	°C/W
Single pulse avalanche energy ⁴⁾	E_{AS}	200	mJ
Junction Temperature	T_J	175	°C
Storage Temperature Range	T_{STG}	-55 ~ +175	°C

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			±100	nA
Gate threshold voltage ²⁾	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	2.0	2.8	V
Drain-source on-resistance ²⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		18	23	mΩ
		$V_{GS} = 4.5V, I_D = 20A$		22	27	
Forward Transconductance ²⁾	g_{FS}	$V_{DS} = 5V, I_D = 20A$		35		S
Dynamic characteristics³⁾						
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$		1600		pF
Output Capacitance	C_{oss}			139		
Reverse Transfer Capacitance	C_{rss}			11		
Total Gate Charge	Q_g	$V_{DS} = 50V, V_{GS} = 10V, I_D = 20A$		26		nC
Gate-Source Charge	Q_{gs}			7.4		
Gate-Drain Charge	Q_{gd}			3.8		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 50V, V_{GS} = 10V, I_D = 20A, R_G = 1.6\Omega$		6		nS
Turn-on rise time	t_r			2		
Turn-off delay time	$t_{d(off)}$			18		
Turn-off fall time	t_f			2		
Source-Drain Diode characteristics						
Diode Forward voltage ²⁾	V_{SD}	$V_{GS} = 0V, I_S = 35A$			1.2	V
Diode Forward Current ¹⁾	I_S				35	A
Reverse Recovery Time	t_{rr}	$T_J = 25^\circ\text{C}, I_F = 20A$		26		nS
Reverse Recovery Charge	Q_{rr}	$di/dt = 500A/\mu s^2$		98		nC

Notes:

- 1) Surface Mounted on FR4 Board, $t \leq 10$ sec.
- 2) Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- 3) Guaranteed by design, not subject to production.
- 4) EAS condition : $T_J = 25^\circ\text{C}, V_{GS} = 10V, V_{DD} = 20V, I_D = 20A, L = 0.5mH, R_G = 25\Omega$.

Typical Characteristics

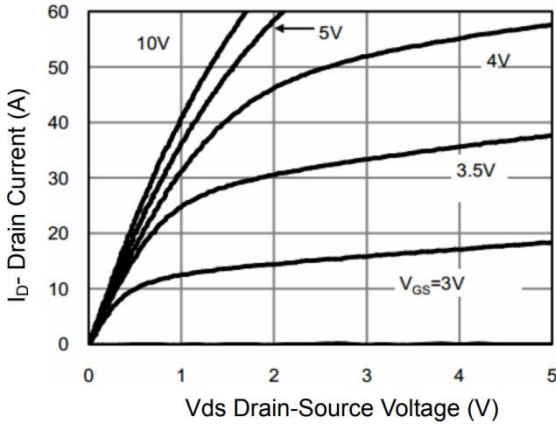


Figure 1 Output Characteristics

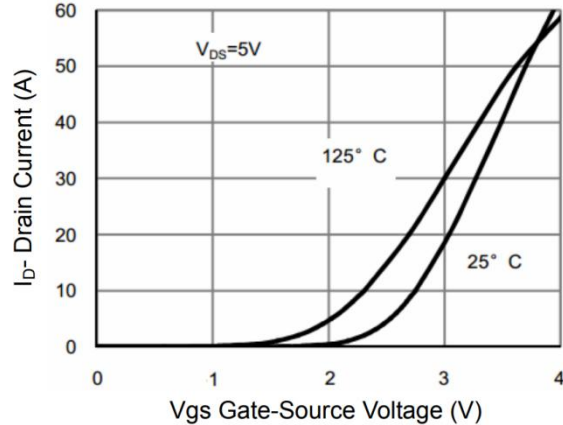


Figure 2 Transfer Characteristics

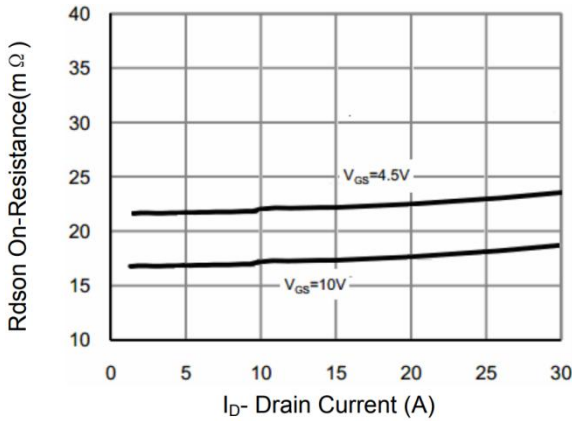


Figure 3 Rds(on)- Drain Current

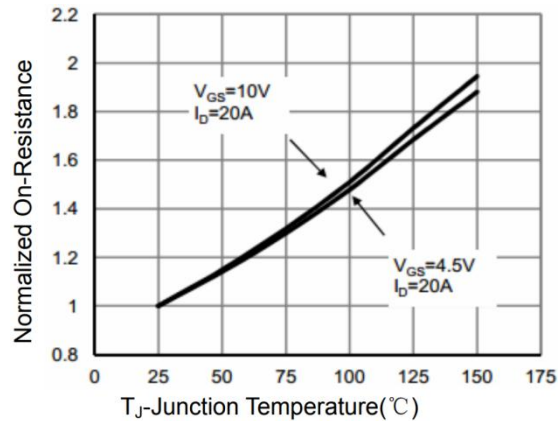


Figure 4 Rds(on)-Junction Temperature

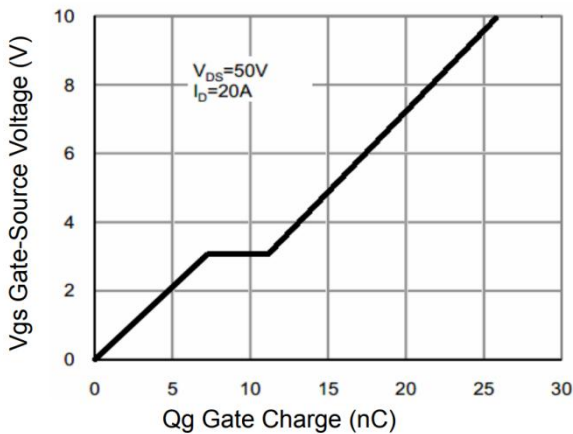


Figure 5 Gate Charge

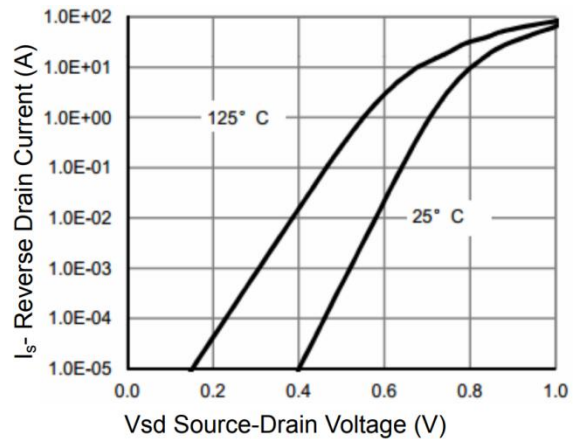


Figure 6 Source- Drain Diode Forward

Typical Characteristics

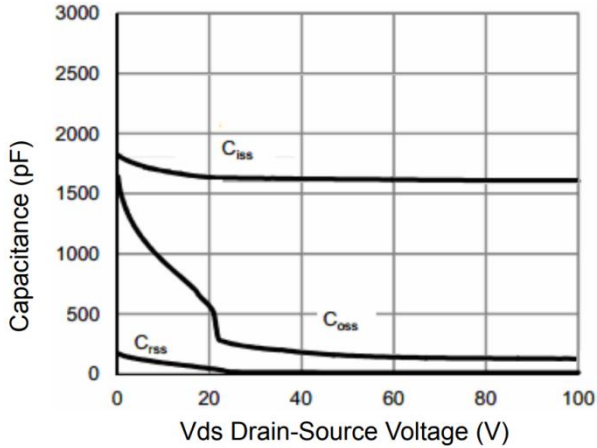


Figure 7 Capacitance vs Vds

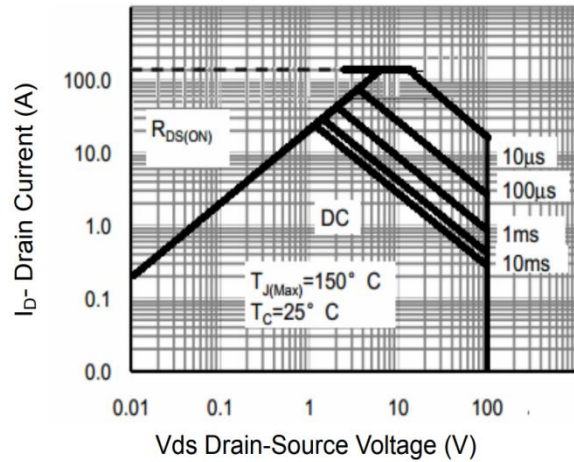


Figure 8 Safe Operation Area

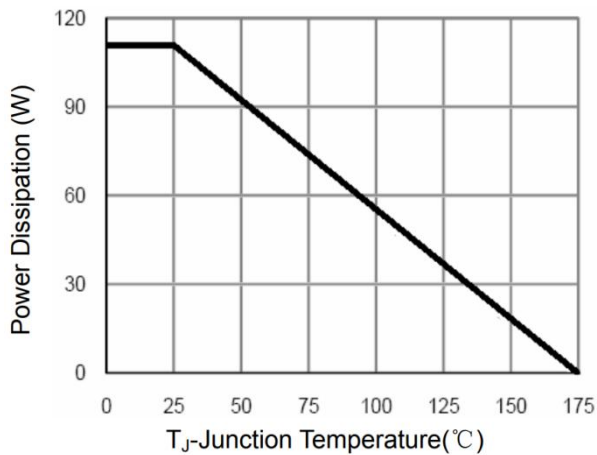


Figure 9 Power De-rating

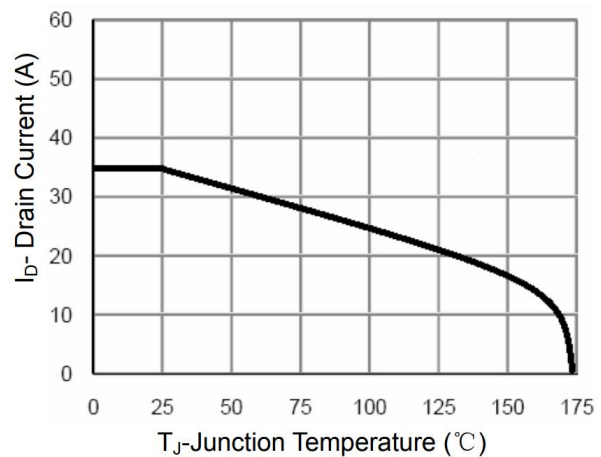


Figure 10 Current De-rating

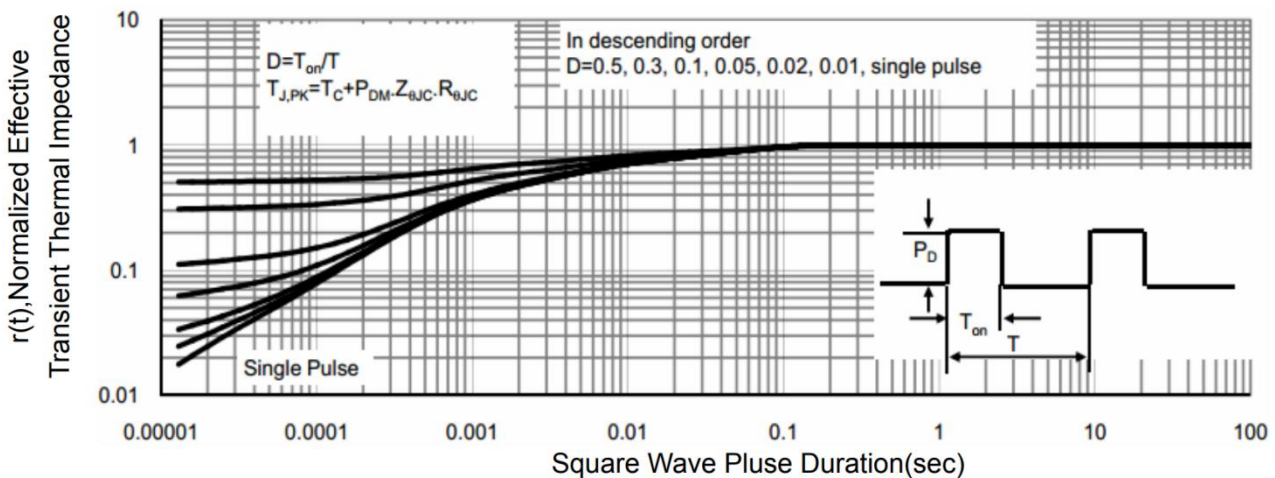
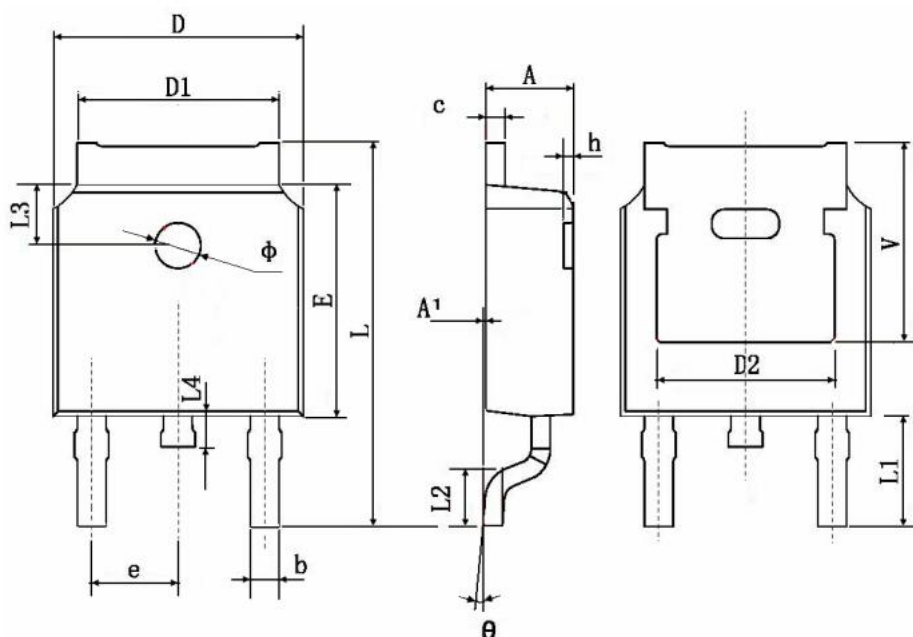


Figure 11 Normalized Maximum Transient Thermal Impedance

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	0.130	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	5.500	0.201	0.217
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.800	0.055	0.070
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°
V	5.350 TYP		0.211 TYP	