

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
60V	8.5mΩ@10V	80A

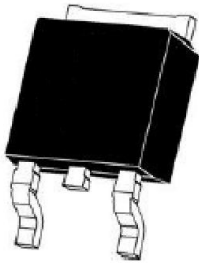
### Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

### Application

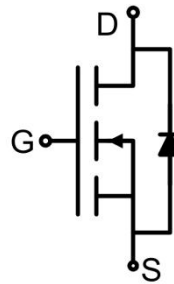
- Load Switching
- PWM

### Package



TO-252AB

### Circuit diagram



### Marking



### Absolute maximum ratings (T<sub>c</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	80	A
Continuous Drain Current(T <sub>c</sub> =100 °C )	I <sub>D</sub> (100 °C)	56.5	A
Pulsed Drain Current	I <sub>DM</sub>	320	A
Power Dissipation	P <sub>D</sub>	110	W
Thermal Resistance,Junction-to-Ambient	R <sub>θJA</sub>	60	°C/W
Thermal Resistance,Junction-to-Case	R <sub>θJC</sub>	1.36	°C/W
Single pulse avalanche energy	E <sub>AS</sub>	390	mJ
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ +150	°C

### Electrical characteristics (T<sub>c</sub>=25 °C, unless otherwise noted)

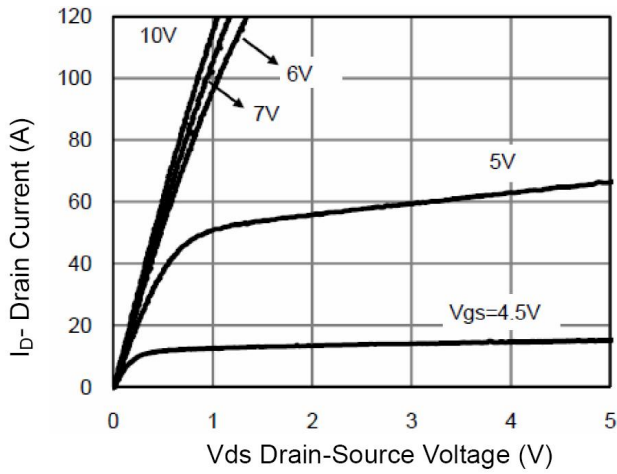
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	60			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =60V,V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0	2.8	4.0	V
Drain-source on-resistance <sup>1)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		7	8.5	mΩ
<b>Dynamic characteristics<sup>2)</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =30V,V <sub>GS</sub> =0V,f =1MHz		4000		pF
Output Capacitance	C <sub>oss</sub>			290		
Reverse Transfer Capacitance	C <sub>rss</sub>			210		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =30V,V <sub>GS</sub> =10V,I <sub>D</sub> =20A		90		nC
Gate-Source Charge	Q <sub>gs</sub>			9		
Gate-Drain Charge	Q <sub>gd</sub>			18		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V,V <sub>GS</sub> =10V, R <sub>L</sub> =1Ω,R <sub>GEN</sub> =3Ω		8.5		nS
Turn-on rise time	t <sub>r</sub>			7		
Turn-off delay time	t <sub>d(off)</sub>			40		
Turn-off fall time	t <sub>f</sub>			15		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current <sup>1)</sup>	I <sub>s</sub>				80	A
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> =0V, I <sub>s</sub> =20A			1.2	V
Reverse Recovery Time	t <sub>rr</sub>	T <sub>J</sub> = 25°C, I <sub>F</sub> =20A		32		nS
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = 500A/μs <sup>1)</sup>		45		nC

Notes:

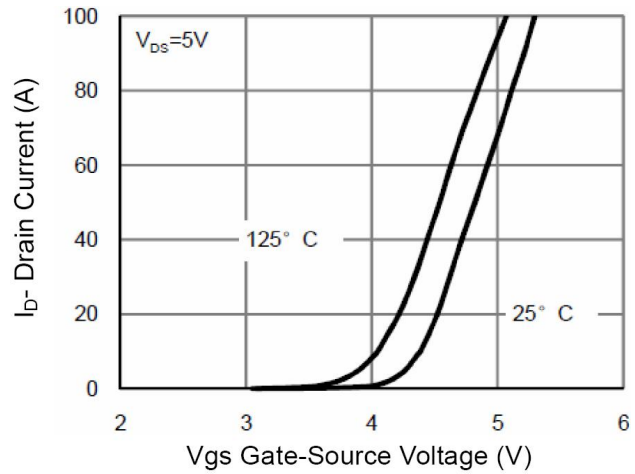
1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

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

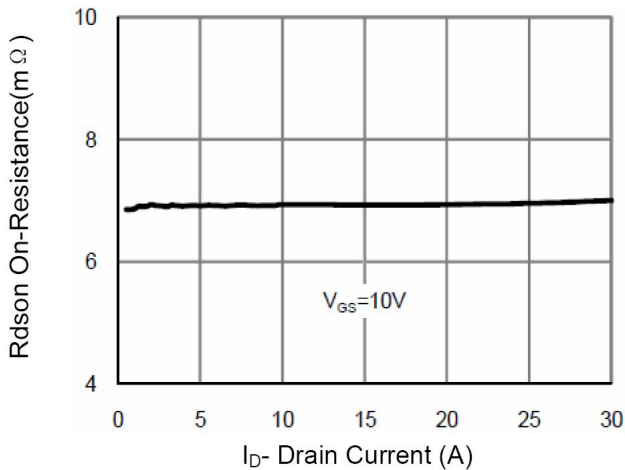
## Typical Characteristics



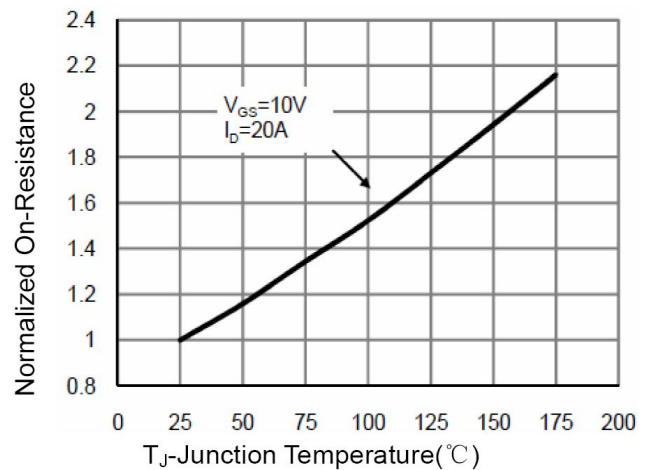
**Figure 1 Output Characteristics**



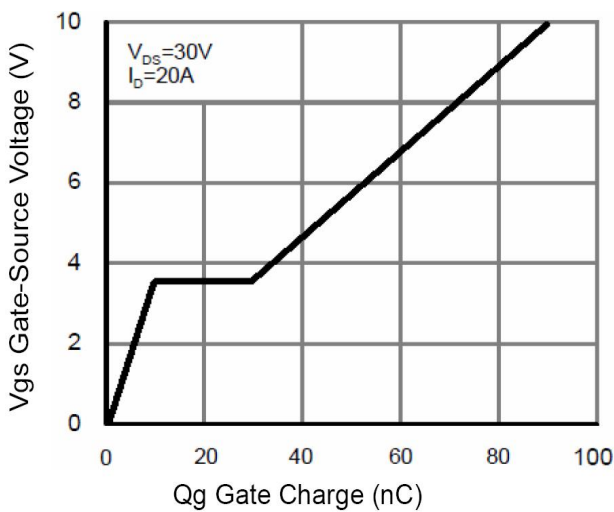
**Figure 2 Transfer Characteristics**



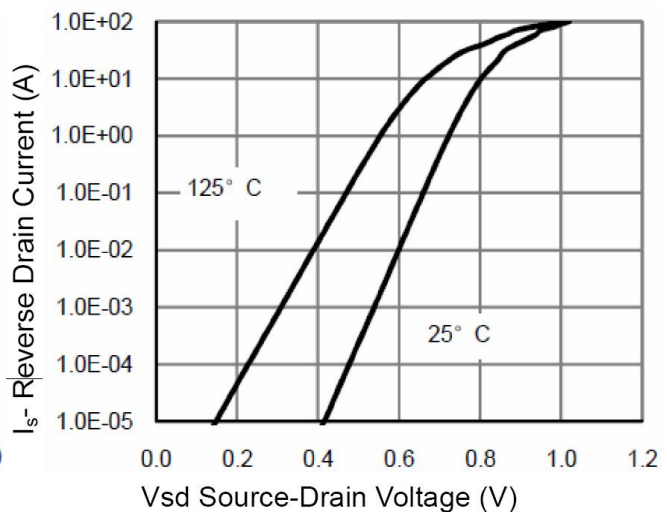
**Figure 3 Rdson- Drain Current**



**Figure 4 Rdson-Junction Temperature**

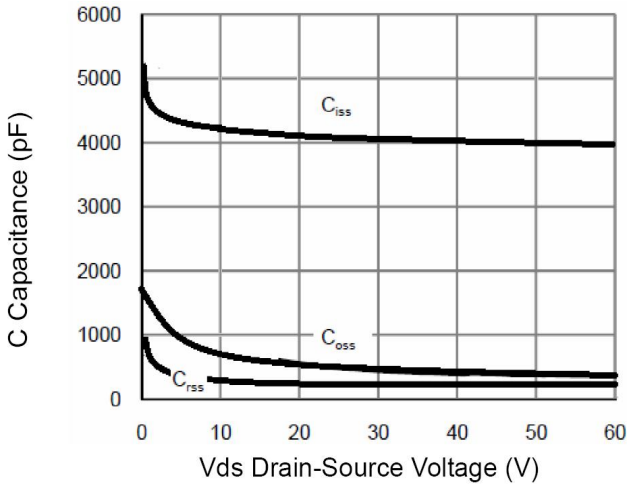


**Figure 5 Gate Charge**

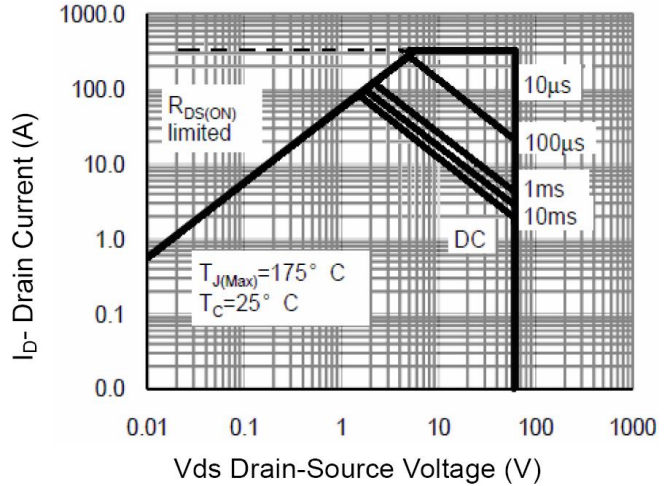


**Figure 6 Source- Drain Diode Forward**

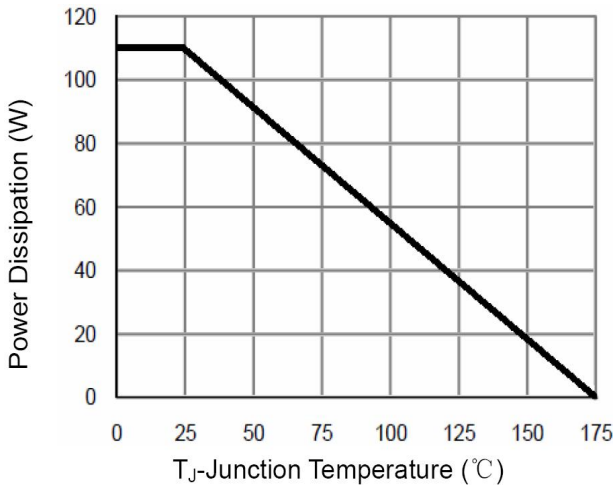
## Typical Characteristics



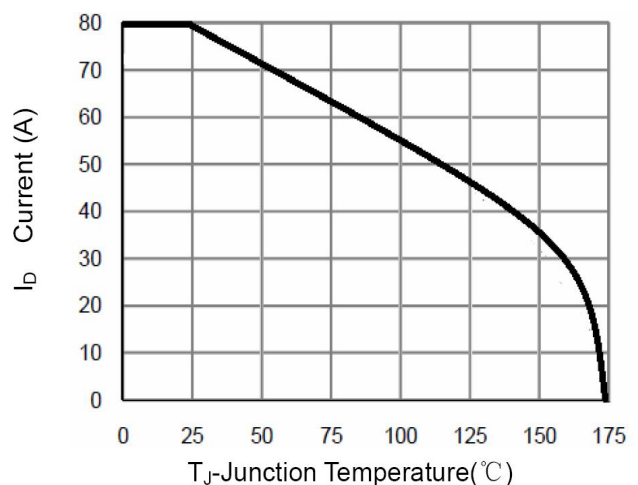
**Figure 7 Capacitance vs Vds**



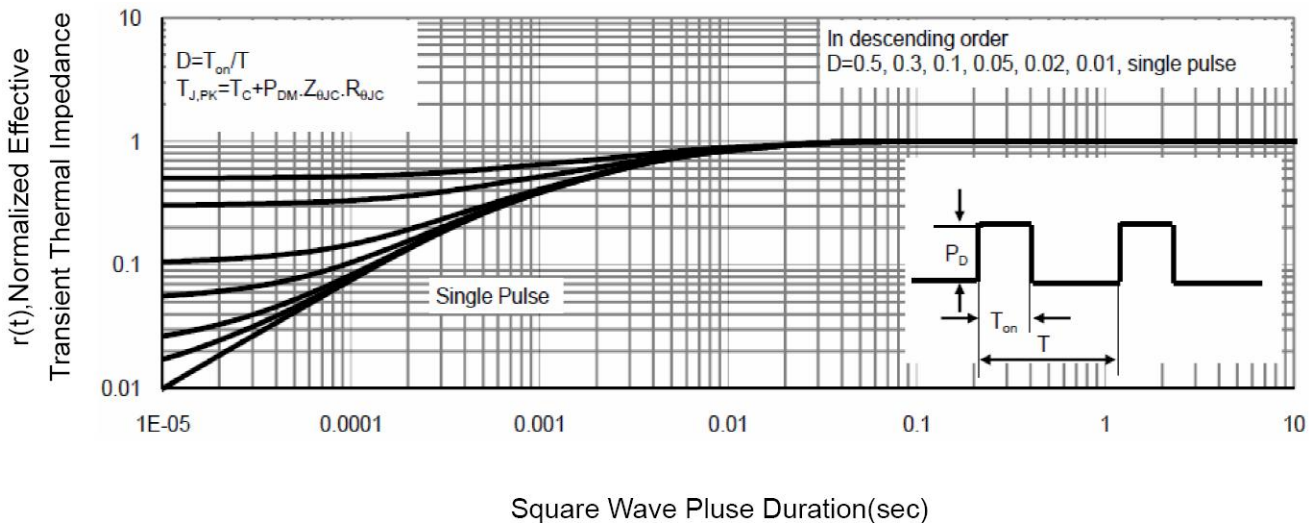
**Figure 8 Safe Operation Area**



**Figure 9 Power De-rating**

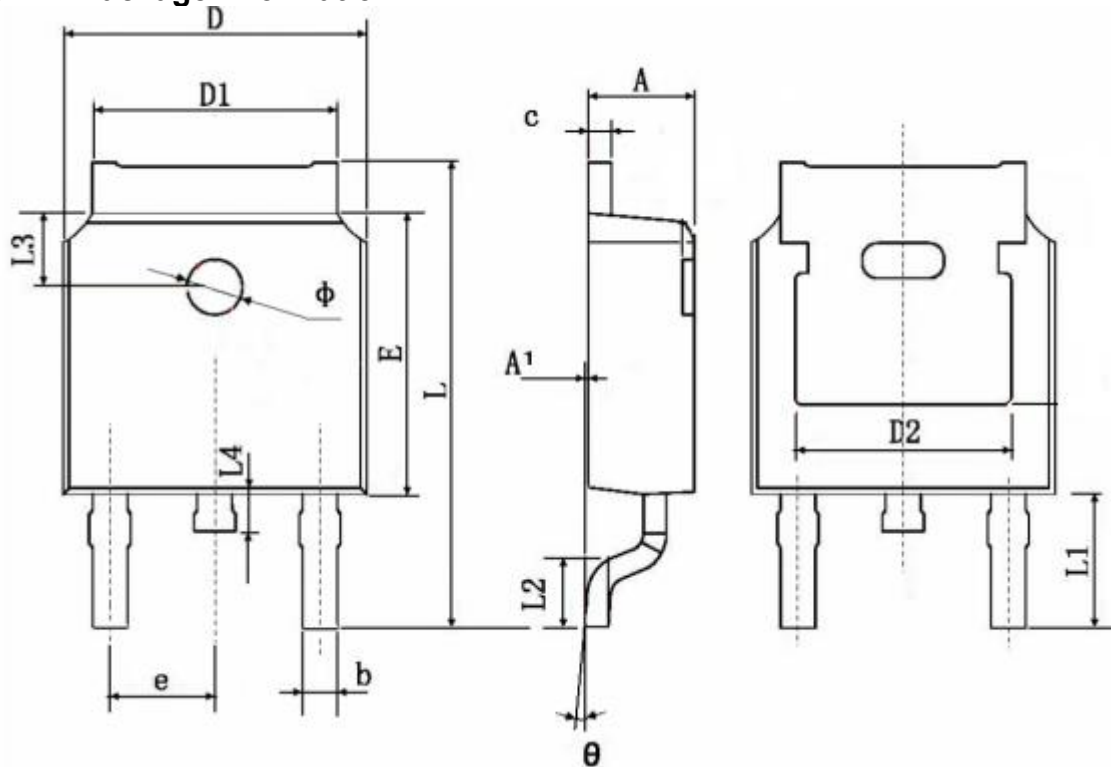


**Figure 10 Id Current- Junction Temperature**



**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	0.086	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	2.190	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 BSC		0.114 BSC	
L2	1.400	1.800	0.055	0.070
L3	1.600 REF		0.063 REF	
L4	0.600	1.000	0.023	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°