

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	14.5mΩ@10V	57A

Feature

- Special process technology for high ESD capability
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Suffix "-Q1" for AEC-Q101

Application

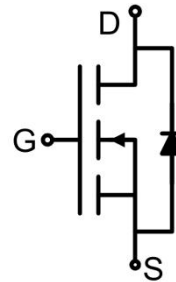
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

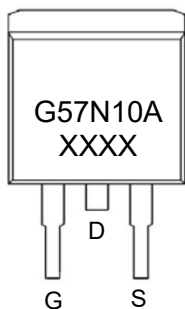


TO-263AB

Circuit diagram



Marking



Absolute Maximum Ratings (T_c=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	57	A
Continuous Drain Current(T _c =100°C)	I _D (100°C)	40	A
Pulsed Drain Current	I _{DM}	160	A
Power Dissipation	P _D	160	W
Thermal Resistance,Junction-to-Case	R _{θJC}	0.94	°C/W
Single pulse avalanche energy	E _{AS}	580	mJ
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_c=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	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} =±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2		4	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} =10V, I _D =28A		12.5	14.5	mΩ
Forward transconductance	g _{FS}	V _{DS} =25V, I _D =28A	32			S
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V,f =1MHz		3778		pF
Output Capacitance	C _{oss}			170		
Reverse Transfer Capacitance	C _{rss}			132.3		
Total Gate Charge	Q _g	V _{DS} =50V,V _{GS} =10V,I _D =20A		81.6		nC
Gate-Source Charge	Q _{gs}			19.4		
Gate-Drain Charge	Q _{gd}			26.1		
Turn-on delay time	t _{d(on)}	V _{DD} =30V,V _{GS} =10V, I _D =2A,R _{GEN} =2.5Ω		17		nS
Turn-on rise time	t _r			13		
Turn-off delay time	t _{d(off)}			55		
Turn-off fall time	t _f			16		
Source-Drain Diode characteristics						
Diode Forward Current	I _s				57	A
Diode Forward voltage ¹⁾	V _{DS}	V _{GS} =0V, I _s =28A			1.2	V
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F =28A		35		nS
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs ¹⁾		58		nC

Notes:

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

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

Typical Characteristics

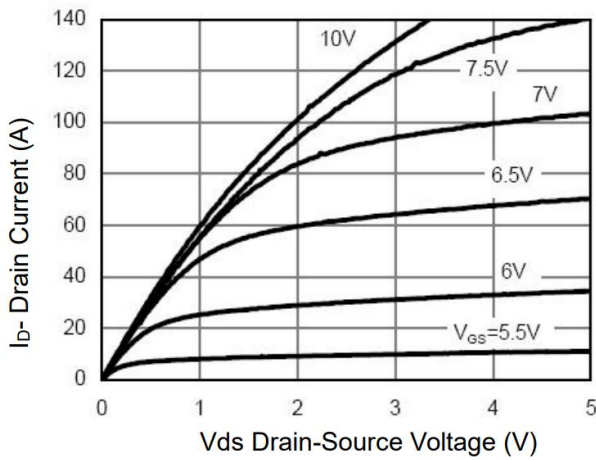


Figure 1 Output Characteristics

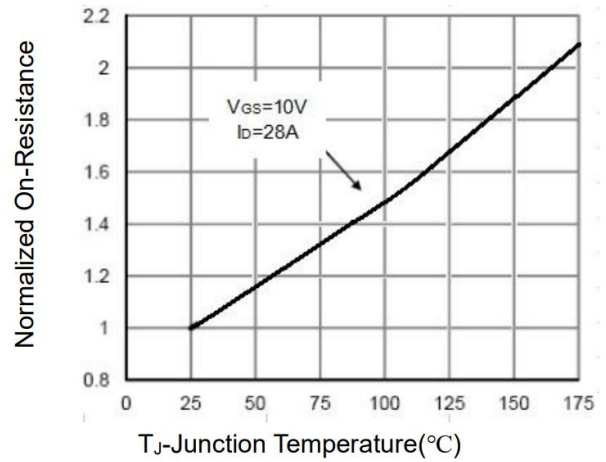


Figure 2 Rdson-Junction Temperature

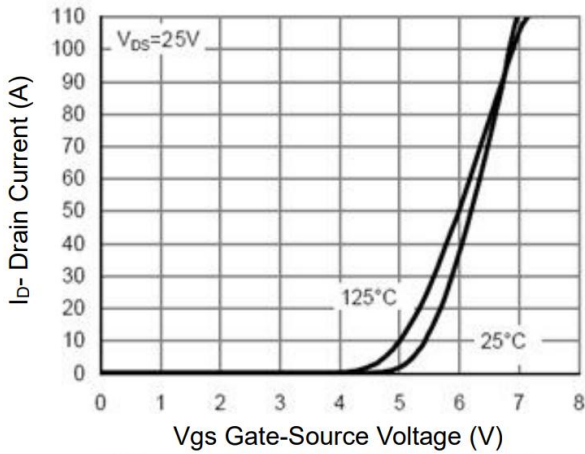


Figure 3 Transfer Characteristics

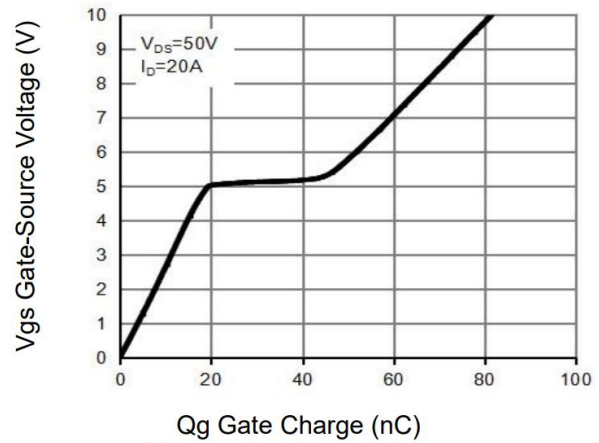


Figure 4 Gate Charge

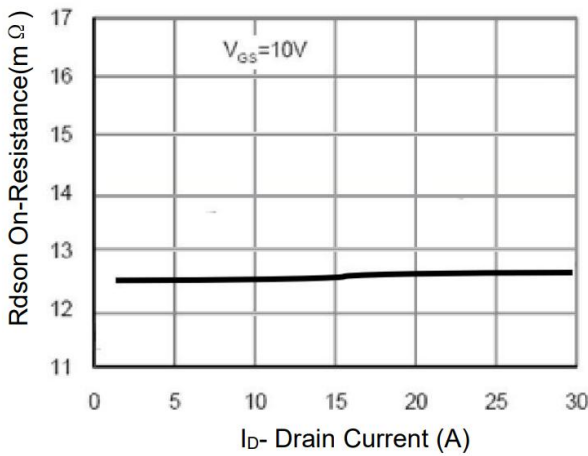


Figure 5 Rdson- Drain Current

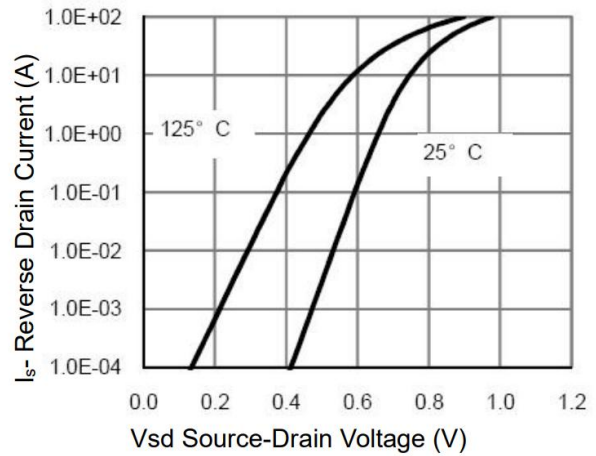


Figure 6 Source- Drain Diode Forward

Typical Characteristics

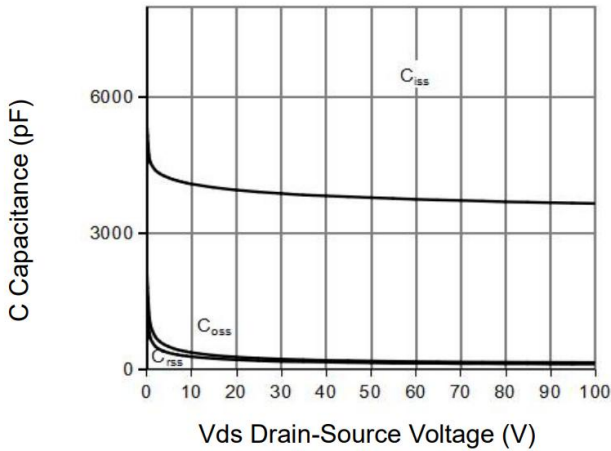


Figure 7 Capacitance vs Vds

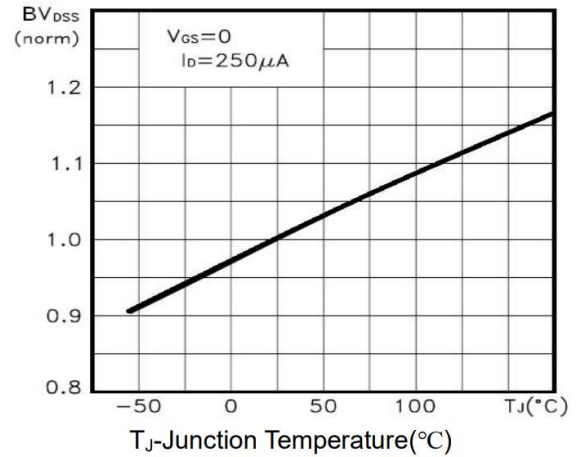


Figure 8 BV_{DSS} vs Junction Temperature

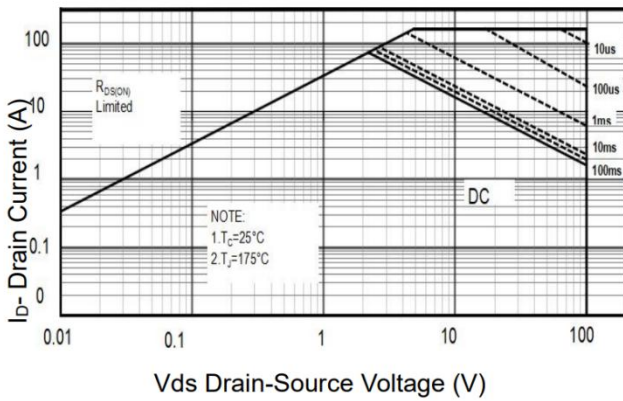


Figure 9 Safe Operation Area

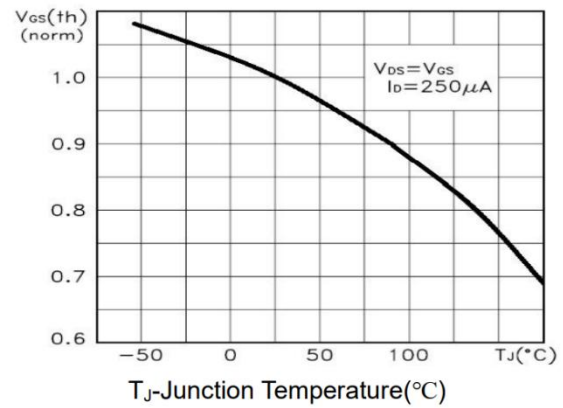


Figure 10 V_{GS(th)} vs Junction Temperature

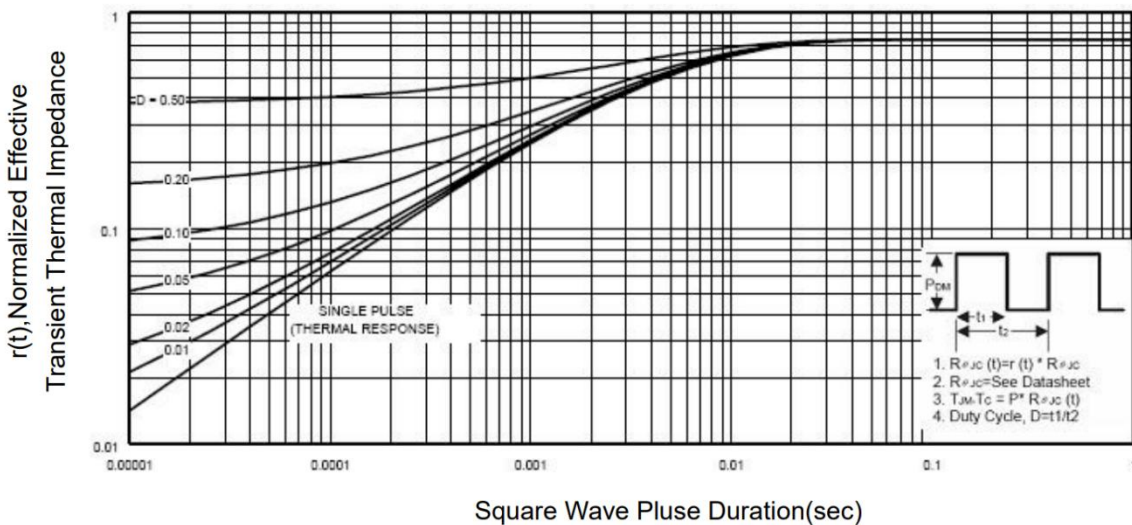
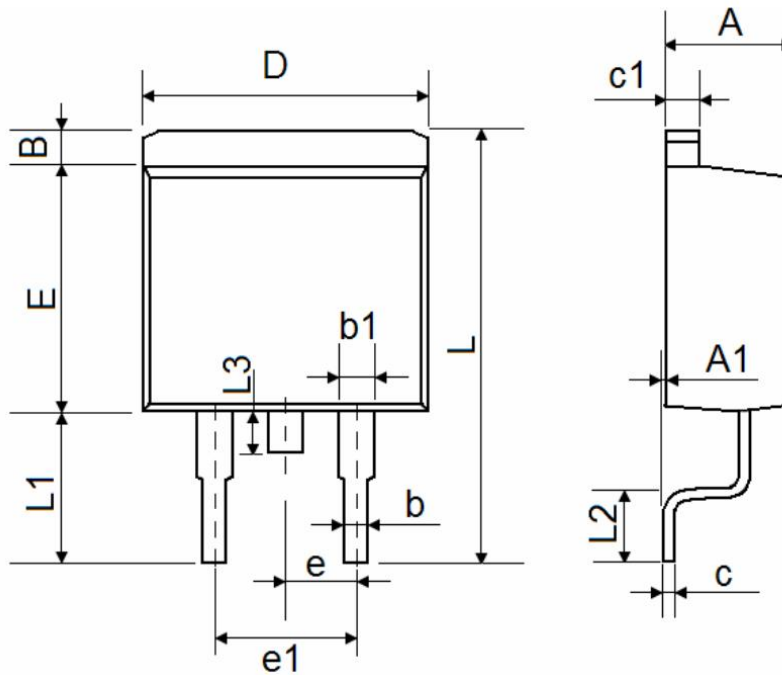


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-263AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.200	4.670	0.165	0.184
A1	0.000	0.250	0.000	0.010
B	1.360 REF		0.054 REF	
b	0.700	0.910	0.028	0.036
b1	1.170	1.750	0.046	0.069
c	0.310	0.600	0.012	0.024
c1	1.150	1.400	0.045	0.055
D	10.010	10.450	0.394	0.411
E	8.500	9.300	0.335	0.366
e	2.540 BSC.		0.100 BSC.	
e1	5.080 BSC.		0.200 BSC.	
L	14.610	15.880	0.575	0.625
L1	4.400	6.000	0.173	0.236
L2	1.780	2.790	0.070	0.110
L3	1.300 REF.		0.051 REF.	