

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	13m Ω @10V	40A
	16m Ω @4.5V	

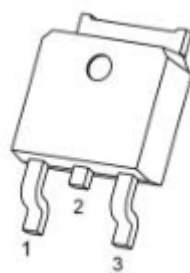
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

Application

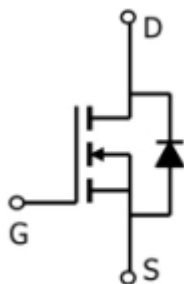
- Power switching application
- PWM Application
- DC-DC Converter

Package

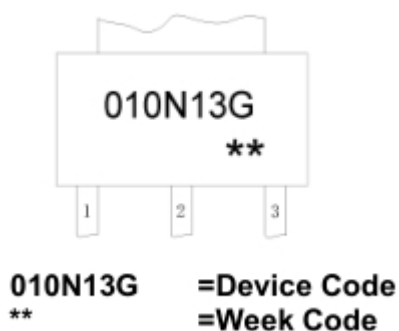


TO-252(1:G 2:D 3:S)

Circuit diagram



Marking



Absolute maximum ratings

(T_a=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	40	A
Pulsed Drain Current ²	I _{DM}	160	A
Single Pulse Avalanche Energy ³	E _{AS}	24	mJ
Total Power Dissipation ⁴	P _D	52	W
Thermal Resistance Junction-Case ¹	R _{θJC}	2.4	°C/ W
Storage Temperature Range	T _{STG}	-55~ +150	°C
Operating Junction Temperature Range	T _J	-55~ +150	°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	BV _{DSS}	V _{GS} = 0V, I _D =250μA	100			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =80V,V _{GS} = 0V , T _J =25°C			1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V , V _{DS} =0V			±100	uA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.8	2.5	V
Static Drain-Source on-Resistance ²	R _{DS(on)}	V _{GS} =10V, I _D =10A		13	17	mΩ
		V _{GS} =4.5V, I _D =6A		16	21	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V,V _{GS} =0V, f=1MHz		770		pF
Output Capacitance	C _{oss}			170		
Reverse Transfer Capacitance	C _{rss}			5		
Switching Characteristics						
Total Gate Charge (4.5V)	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =10A		13		nC
Gate-Source Charge	Q _{gS}			7		
Gate-Drain Charge	Q _{gd}			3		
Turn-On Delay Time	T _{d(on)}	V _{DD} =50V, V _{GS} =10V, I _D =10A, R _{GEN} =6Ω		4.3		nS
Rise Time	T _r			5		
Turn-Off Delay Time	T _{d(off)}			17		
Fall Time	T _f			9		
Drain-Source Diode Characteristics						
Diode forward voltage ²	V _{SD}	V _{GS} =0V, I _S = -1A, T _J =25°C			1.2	V

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating . The test condition is $V_{DD} = 50V, V_{GS} = 10V, L = 0.1mH, R_g = 25\Omega$
4. The power dissipation is limited by 150°C junction temperature

Typical Characteristics

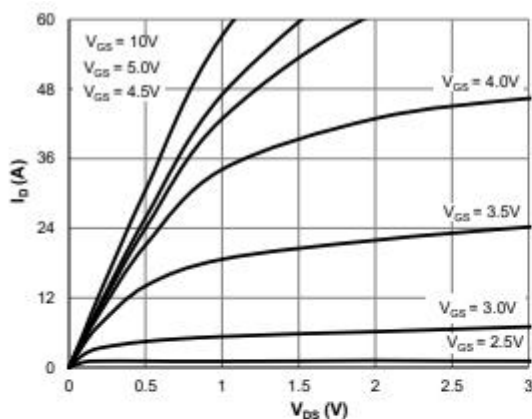


Figure 1: Saturation Characteristics

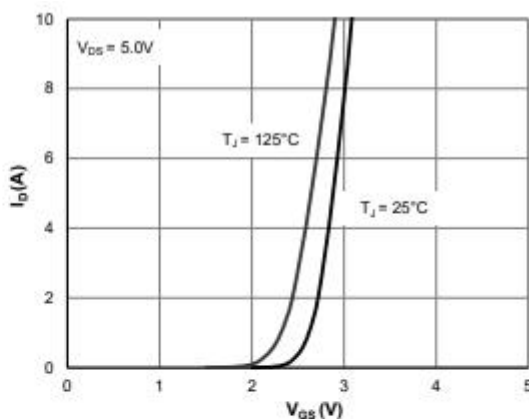


Figure 2: Transfer Characteristics

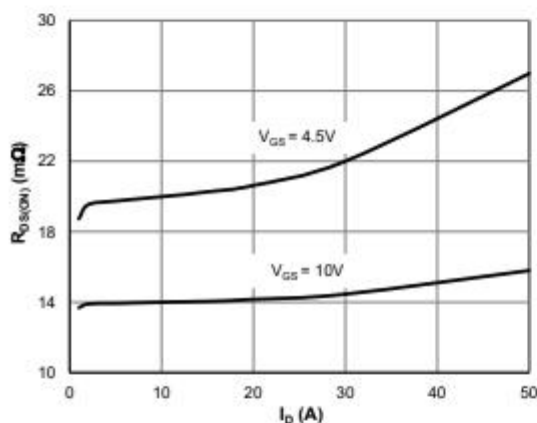
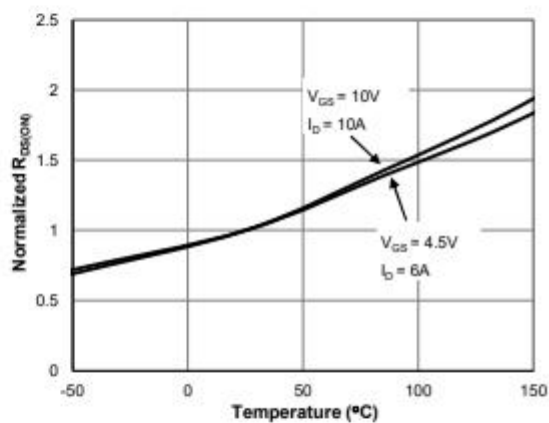
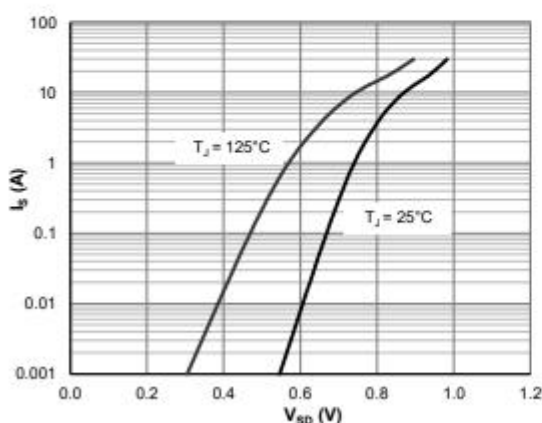

Figure 3: $R_{DS(ON)}$ vs. Drain Current

Figure 4: $R_{DS(ON)}$ vs. Junction Temperature


Figure 5: Body-Diode Characteristics

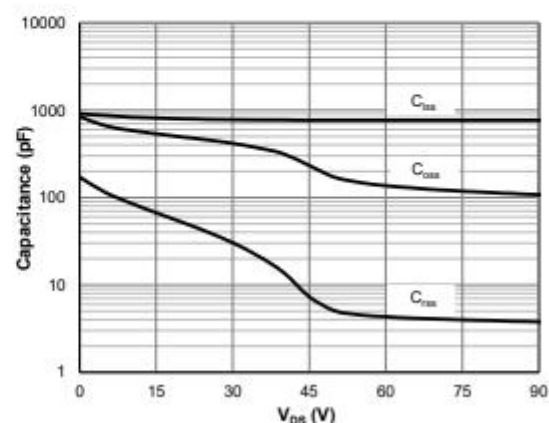


Figure 6: Capacitance Characteristics

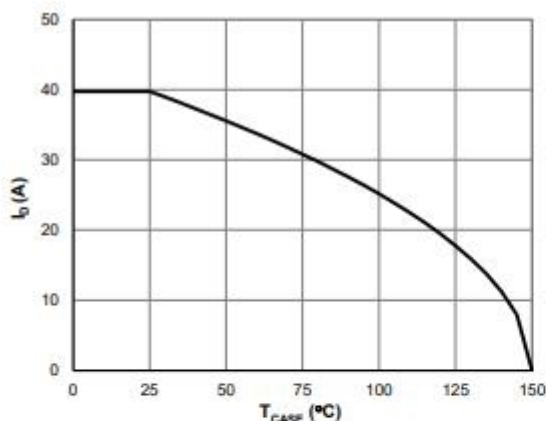


Figure 7: Current De-rating

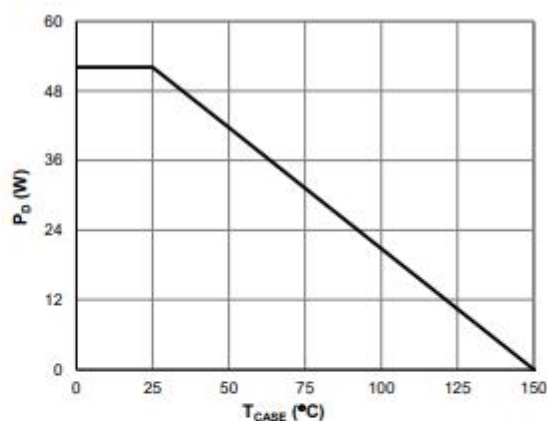


Figure 8: Power De-rating

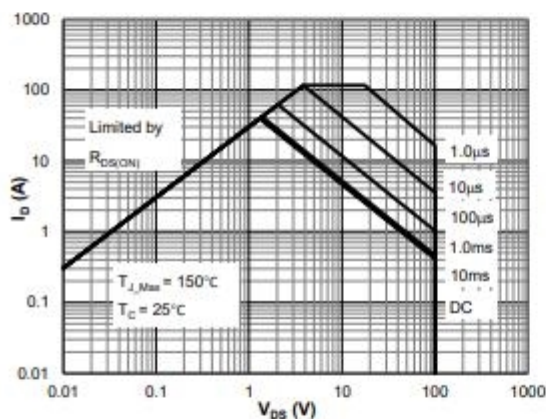


Figure 9: Maximum Safe Operating Area

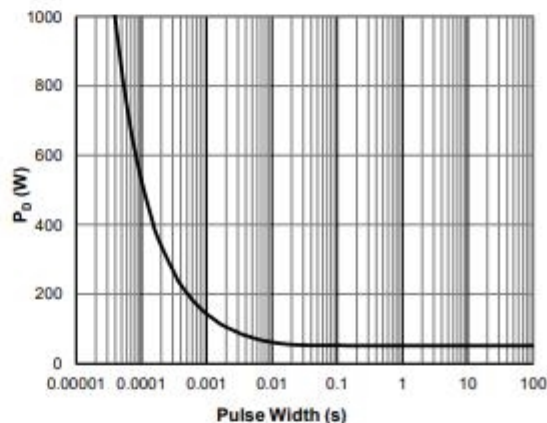


Figure 10: Single Pulse Power Rating, Junction-to-Case

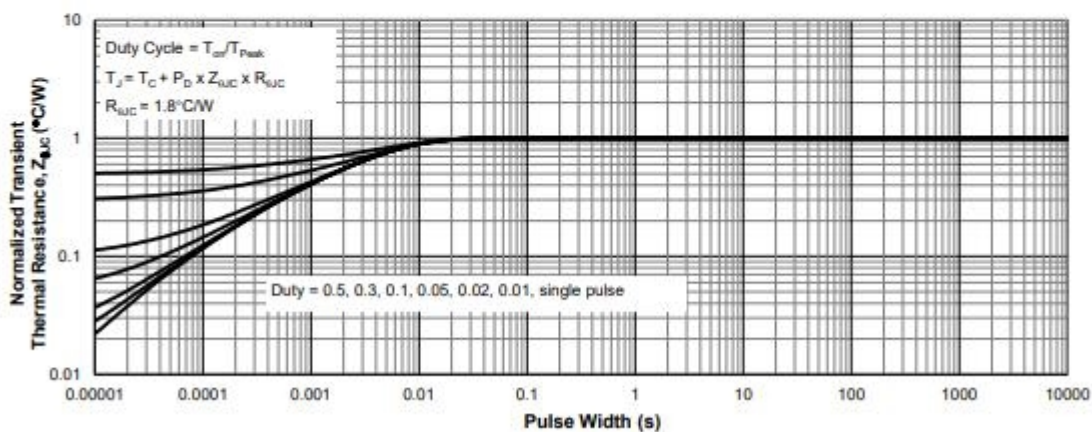
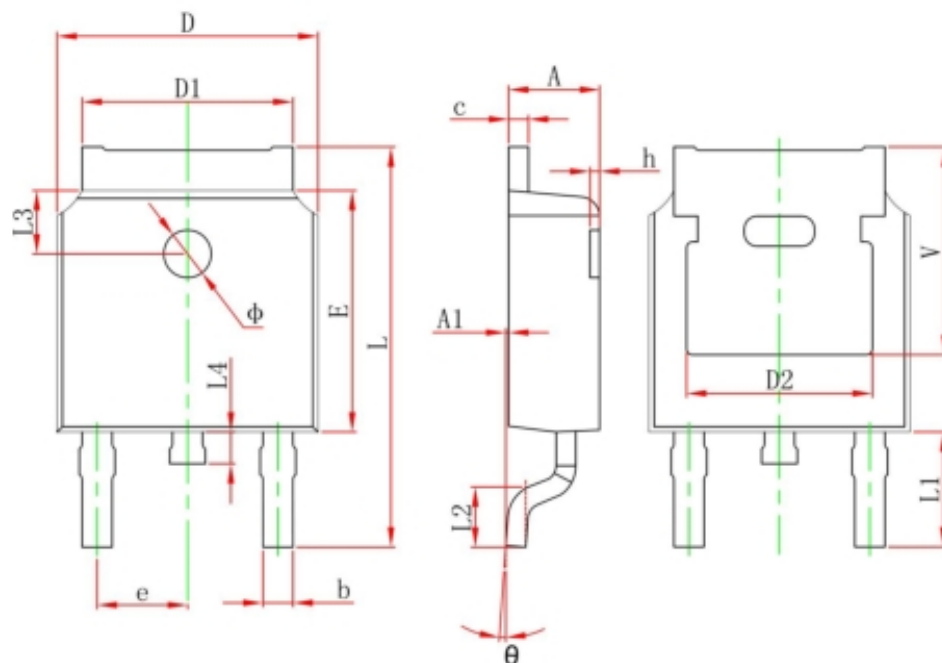


Figure 11: Normalized Maximum Transient Thermal Impedance

TO-252 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
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 REF.		0.211 REF.	