

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	15mΩ@10V	40A
	18mΩ@4.5V	

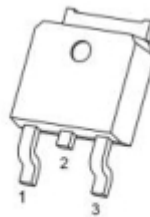
## Feature

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

## Application

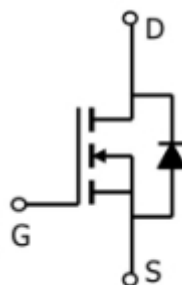
- Power switching application
- DC-DC Converter

## Package

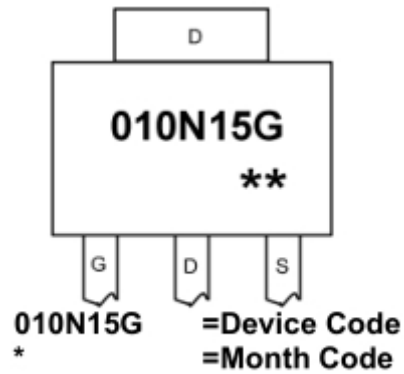


TO-252(1:G 2:D 3:S)

## Circuit diagram



## Marking



## Absolute maximum ratings

(T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (T <sub>c</sub> =25°C)	I <sub>D</sub>	40	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	160	A
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	110	mJ
Total Power Dissipation <sup>4</sup> (T <sub>c</sub> =25°C)	P <sub>D</sub>	72	W
Thermal Resistance Junction-Case <sup>1</sup>	R <sub>θJC</sub>	1.74	°C/ W
Storage Temperature Range	T <sub>STG</sub>	-55~ +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55~ +150	°C

## Electrical characteristics

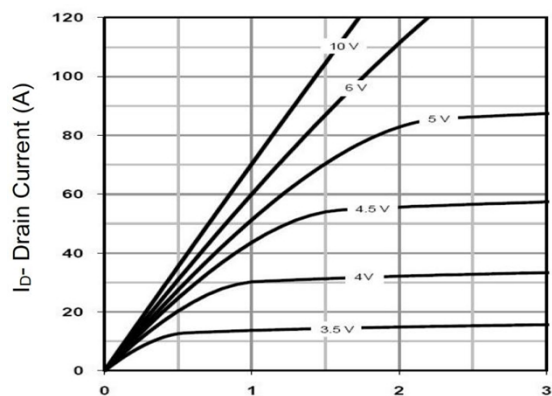
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = 80V, V_{GS} = 0V, T_J = 25^{\circ}C$			1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	$\mu A$
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.8	2.5	V
Static Drain-Source on-Resistance <sup>2</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		15	19	m $\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		18	24	
Dynamic characteristics						
Input Capacitance	$C_{iss}$	$V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$		1871		pF
Output Capacitance	$C_{oss}$			161		
Reverse Transfer Capacitance	$C_{rss}$			19		
Switching Characteristics						
Total Gate Charge (4.5V)	$Q_g$	$V_{DS} = 50V, V_{GS} = 10V, I_D = 20A$		33.5		nC
Gate-Source Charge	$Q_{gS}$			6.9		
Gate-Drain Charge	$Q_{gd}$			5.1		
Turn-On Delay Time	$T_{d(on)}$	$V_{DD} = 50V, V_{GS} = 10V, R_G = 3\Omega, I_D = 20A$		15		nS
Rise Time	$T_r$			18		
Turn-Off Delay Time	$T_{d(off)}$			30		
Fall Time	$T_f$			9		
Drain-Source Diode Characteristics						
Diode forward voltage <sup>2</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 1A, T_J = 25^{\circ}C$			1.2	V

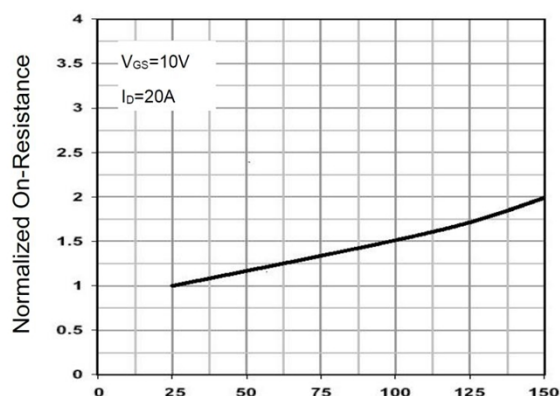
### Notes:

1. The data tested by surface mounted on a 1 inch<sup>2</sup> 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  $V_{DD} = 50V, V_{GS} = 10V, L = 0.5\text{mH}$
4. The power dissipation is limited by  $150^{\circ}\text{C}$  junction temperature

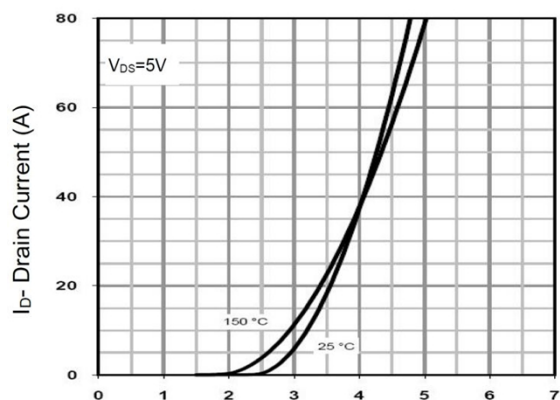
## Typical Characteristics



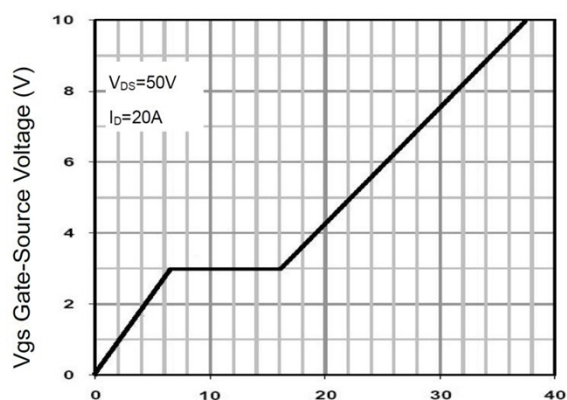
$V_{DS}$  Drain-Source Voltage (V)  
Output Characteristics



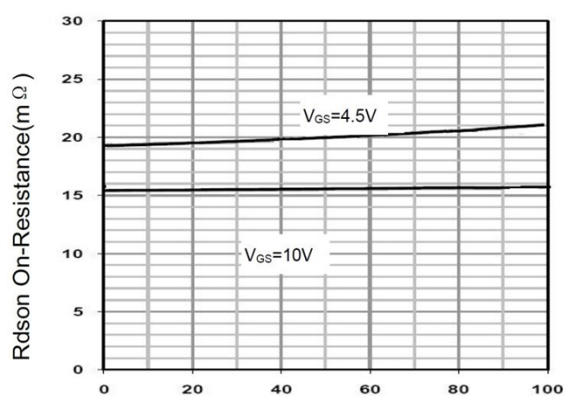
$T_J$ -Junction Temperature ( $^{\circ}C$ )  
 $R_{DS(on)}$ -Junction Temperature



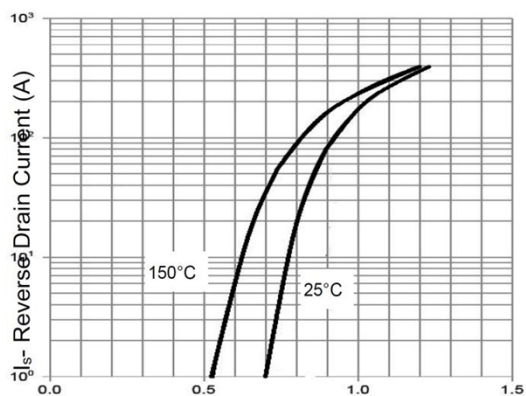
$V_{GS}$  Gate-Source Voltage (V)  
Transfer Characteristics



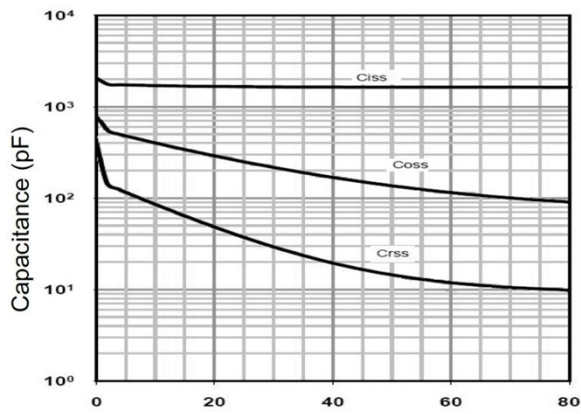
$Q_g$  Gate Charge (nC)  
Gate Charge



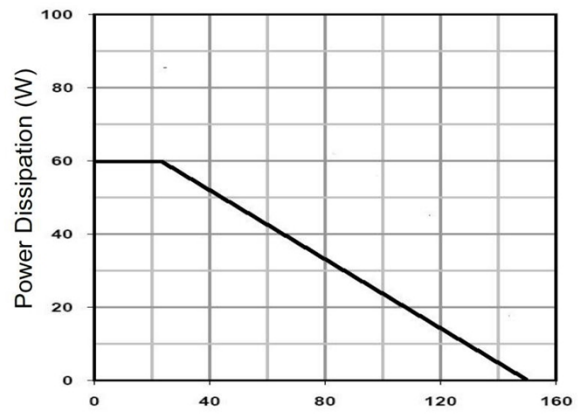
$I_D$ -Drain Current (A)  
 $R_{DS(on)}$ -Drain Current



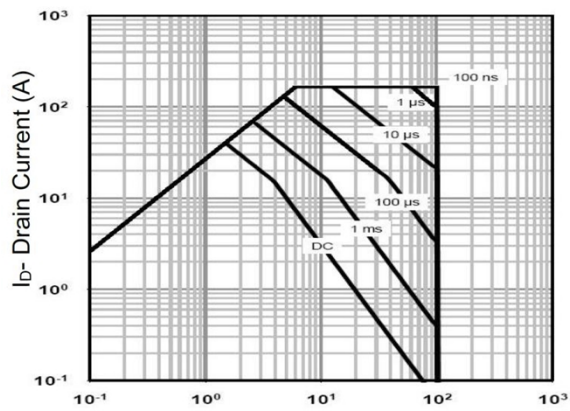
$V_{SD}$  Source-Drain Voltage (V)  
Source-Drain Diode Forward



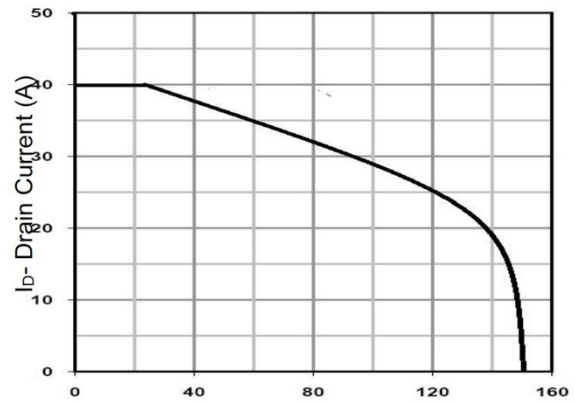
Vds Drain-Source Voltage (V)  
Capacitance vs Vds



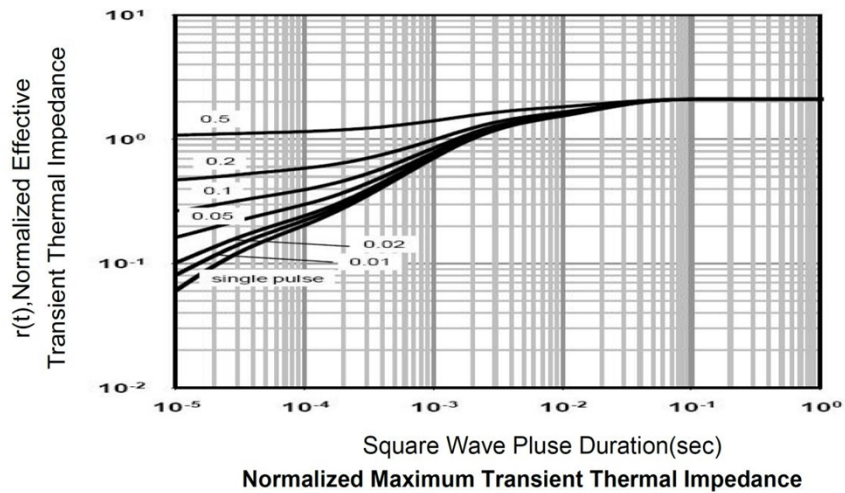
TA-Junction Temperature(°C)  
Power De-rating



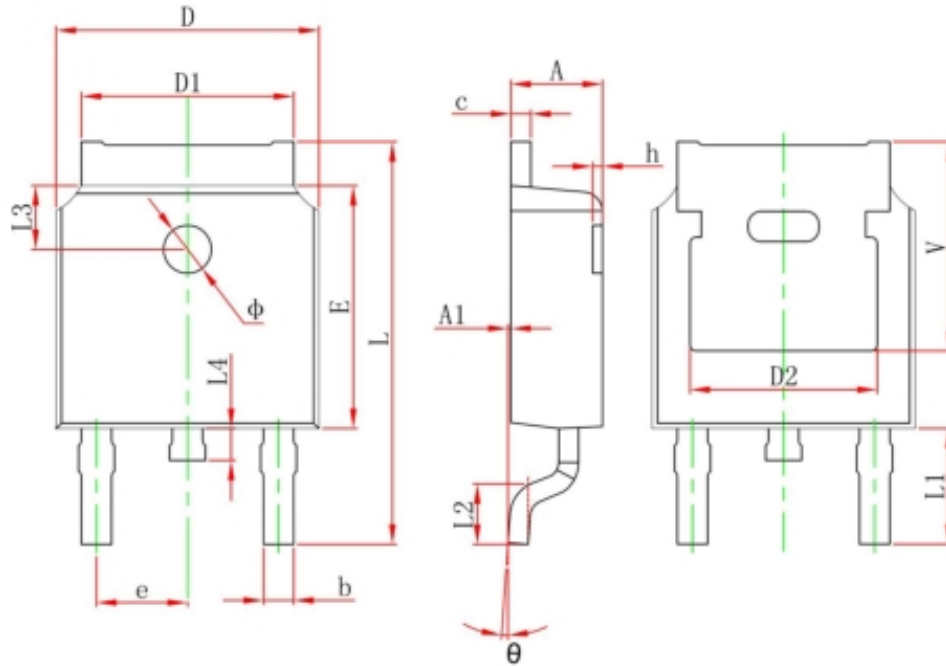
Vds Drain-Source Voltage (V)  
Safe Operation Area



TA-Junction Temperature (°C)  
Current De-rating



## TO-252-2L 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.	