

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
30V	2m $\Omega$ @10V	165A
	3m $\Omega$ @4.5V	

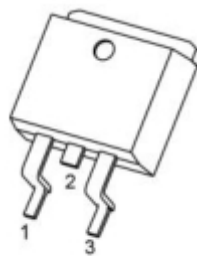
## Feature

- $V_{DS} = 30V, I_D = 150A$
- $R_{DS(ON)} = 2.5\text{ m}\Omega\text{ typ @ } V_{GS} = 10V$
- High density cell design for ultra low Rdson
- Good stability and uniformity with high  $E_{AS}$
- Excellent package for good heat dissipation

## Application

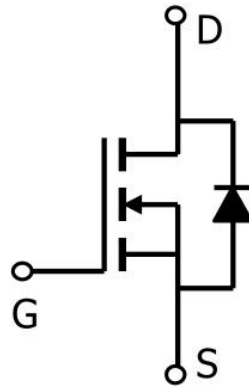
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

## Package

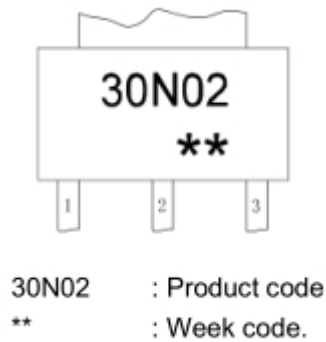


TO-263(G:1 D:2 S:3)

## 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>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (TC=25°C)	I <sub>D</sub>	165	A
Pulsed Drain Current note <sup>1</sup>	I <sub>DM</sub>	660	A
Power Dissipation (TC=25°C)	E <sub>AS</sub>	143	W
Single Pulsed Avalanche Energy note <sup>2</sup>	P <sub>D</sub>	1750	mJ
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	0.87	°C/W
Operating Junction and Storage Temperature Range	T <sub>STG</sub> , T <sub>J</sub>	-55 To 150	°C

## Electrical characteristics

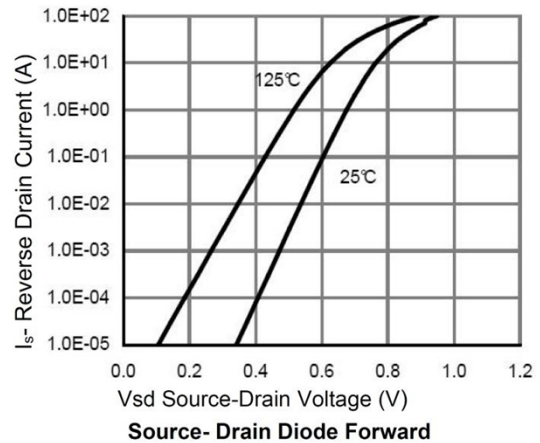
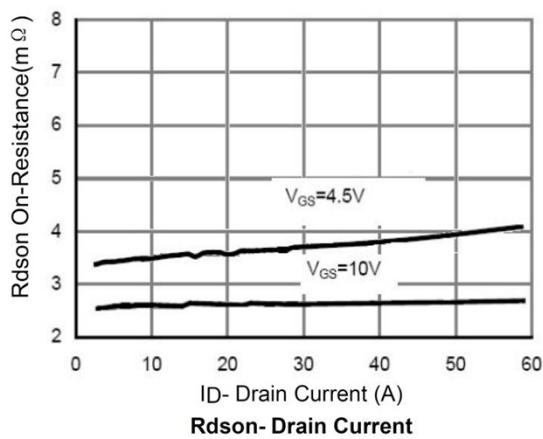
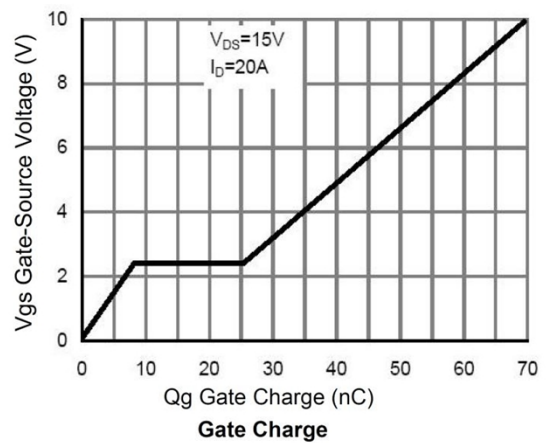
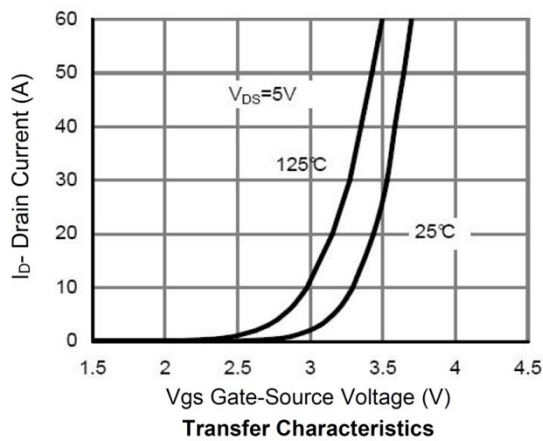
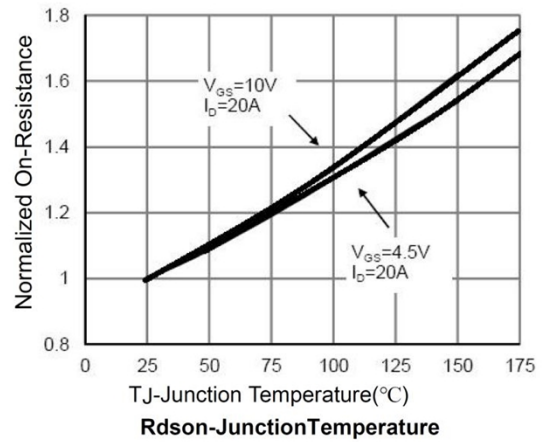
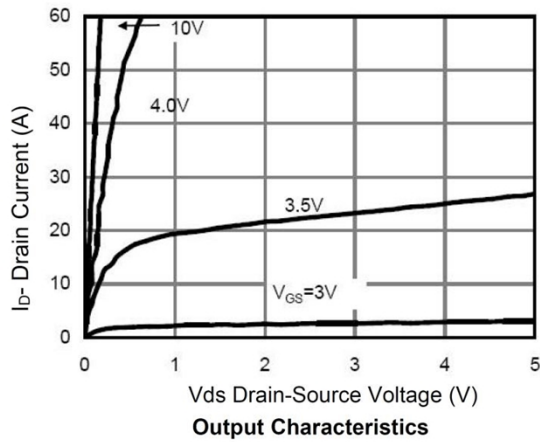
(T<sub>A</sub>=25°C, unless otherwise noted)

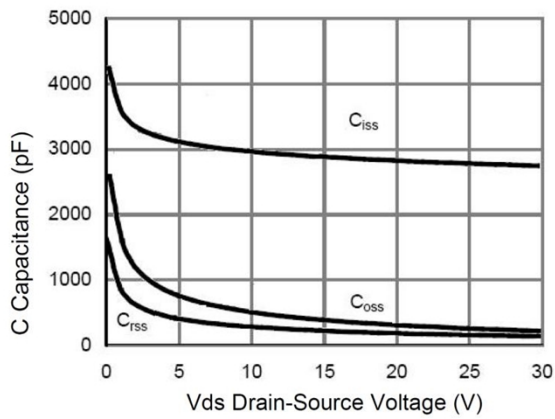
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30	35		V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	$\mu A$
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.6	2.5	V
Drain-source on-resistance <sup>2</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		2	2.5	m $\Omega$
		$V_{GS} = 4.5V, I_D = 20A$		3	4	
		$V_{DS} = 10V, I_D = 20A$	32			
Dynamic Characteristics <sup>(Note4)</sup>						
Input Capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$		5000		pF
Output Capacitance	$C_{oss}$			1135		
Reverse Transfer Capacitance	$C_{rss}$			563		
Switching Characteristics <sup>(Note4)</sup>						
Turn-On Delay Time	$T_{d(on)}$	$V_{DD} = 15V, I_D = 2A,$ $R_L = 15\Omega, V_{GS} = 10V,$ $R_G = 2.5\Omega$		26		nS
Rise Time	$T_r$			24		
Turn-Off Delay Time	$T_{d(off)}$			91		
Fall Time	$T_f$			39		
Total Gate Charge	$Q_g$	$V_{DS} = 15V, I_D = 30A,$ $V_{GS} = 10V$		38		pF
Gate-Source Charge	$Q_{gs}$			9		
Gate-Drain Charge	$Q_{gd}$			13		
Drain-Source Diode Characteristics						
Diode Forward Voltage <sup>(Note 3)</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 150A$			1.2	V
Diode Forward Current <sup>(Note 2)</sup>	$I_S$				150	A
Reverse Recovery Time	$t_{rr}$	$T_J = 25^{\circ}C, I_F = 20A$		42		nS
Reverse Recovery Charge	$Q_{rr}$	$di/dt = 100A/\mu s^{(Note3)}$		39		nC
Forward Turn-On Time	$t_{on}$	Intrinsic turn-on time is negligible (turn-on is dominated by				

### Note:

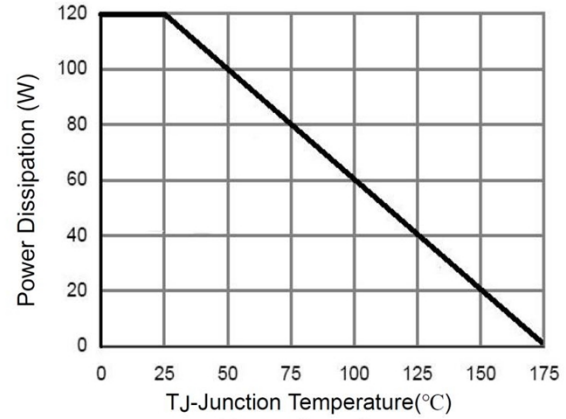
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. E AS condition :T<sub>J</sub>=25°C, V<sub>DD</sub> = 20V, V<sub>G</sub> = 10V, L = 1mH, R<sub>G</sub> = 25Ω, I<sub>AS</sub> = 58.5A

## Typical Characteristics

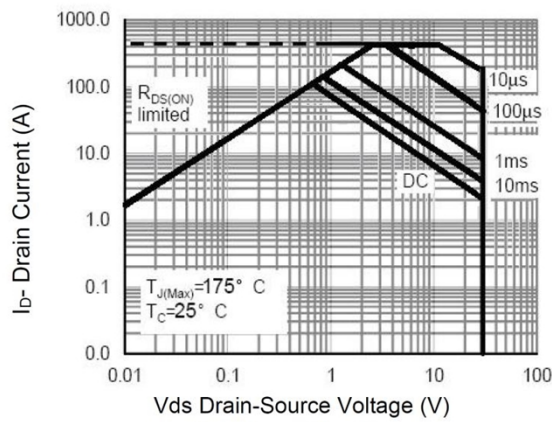




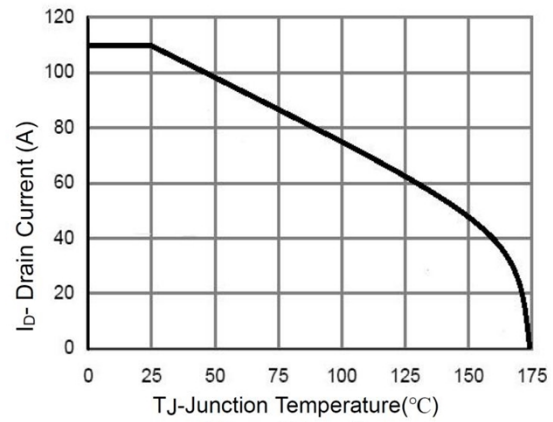
Capacitance vs Vds



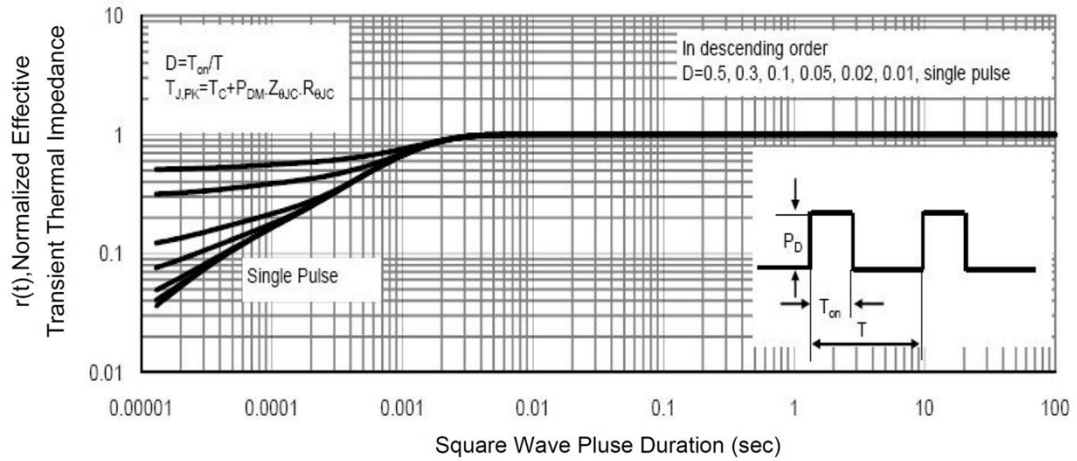
Power De-rating



Safe Operation Area

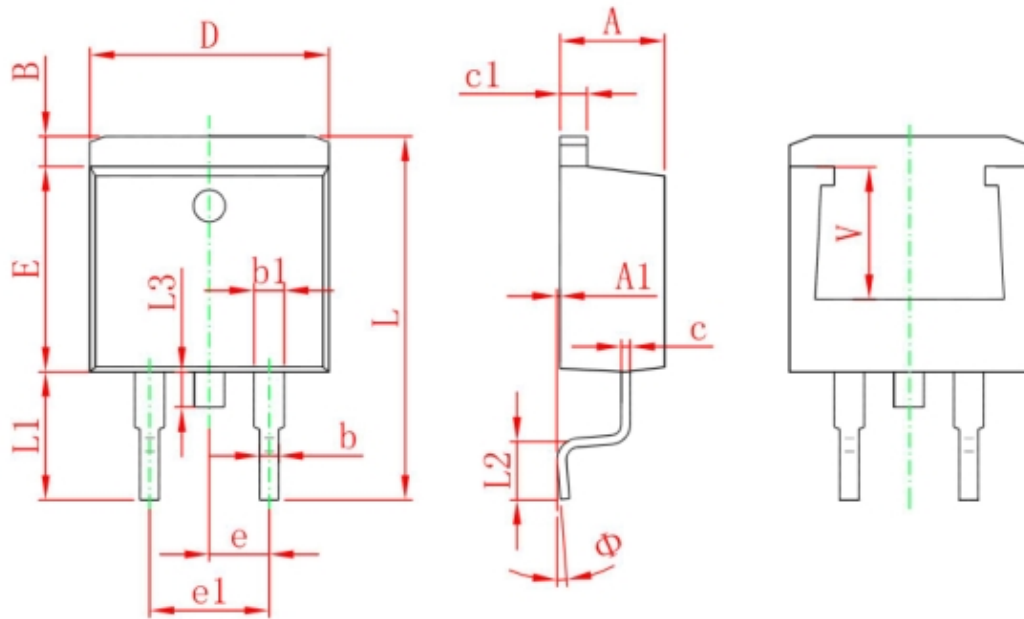


Current De-rating



Normalized Maximum Transient Thermal Impedance

## TO-263 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	