

## 100V N-Channel Power MOSFET

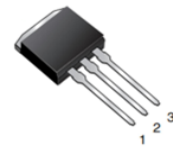
### DESCRIPTION :

- Low on resistance
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test
- 100% $\Delta V_{ds}$  Tested
- Pb-Free plating
- Halogen-Free
- RoHS compliant

$V_{DS}$	100V
$I_D$	100A
$R_{DS(ON\_Typ.)}$	5.9m $\Omega$

### TYPICAL APPLICATIONS :

- Motor Control and Drive
- Discharge for Battery Management System
- Synchronous Rectifier for SMPS
- Charger



TO-262

### MAXIMUM RATINGS (at $T_C = 25^\circ\text{C}$ , unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		$V_{DS}$	100	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_C=25^\circ\text{C}$ $T_C=100^\circ\text{C}$	$I_D$	100 71	A
Pulsed Drain Current	tp limited by $T_{jmax}$	$I_{D\ pulse}$	400	A
Avalanche energy, single pulse	( $L=0.5\text{mH}$ , $R_g=25\Omega$ )	EAS	342	mJ
Power dissipation	$T_a=25^\circ\text{C}$ $T_C=25^\circ\text{C}$	$P_{tot}$	2 125	W
Operating junction and storage temperature		$T_J, T_{STG}$	-55~+175	$^\circ\text{C}$

## THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient	$R_{\theta JA}$	75	$^{\circ}C/W$
	Junction to Case	$R_{\theta JC}$	1.20	

ELECTRICAL CHARACTERISTICS (at  $T_j = 25^{\circ}C$ , unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage $V_{GS} = 0V, I_D = 250\mu A$	$BV_{DSS}$	100			V
Gate threshold voltage $V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(th)}$	1.2	1.7	2.2	V
Zero gate voltage drain current $V_{DS} = 100V, V_{GS} = 0V, T_j = 25^{\circ}C$ $V_{DS} = 100V, V_{GS} = 0V, T_j = 125^{\circ}C$	$I_{DSS}$			1 100	$\mu A$
Gate-Source Leakage Current $V_{GS} = 20V, V_{DS} = 0V$	$I_{GSS}$			100	nA
Drain-Source On-State Resistance $V_{GS} = 10V, I_D = 60A, T_j = 25^{\circ}C$ $V_{GS} = 4.5V, I_D = 60A, T_j = 25^{\circ}C$	$R_{DS(on)}$		5.9 7.4	7.0 9.5	m $\Omega$
Input capacitance $f = 1MHz, V_{DS} = 50V, V_{GS} = 0V$	$C_{iss}$		2690		pF
Output capacitance $f = 1MHz, V_{DS} = 50V, V_{GS} = 0V$	$C_{oss}$		713		pF
Reverse transfer capacitance $f = 1MHz, V_{DS} = 50V, V_{GS} = 0V$	$C_{rss}$		47		pF
Total Gate Charge $f = 1MHz, V_{GS} = 10V, V_{DS} = 50V, I_D = 60A$	$Q_G$		50		nC
Gate to Source Charge $f = 1MHz, V_{GS} = 10V, V_{DS} = 50V, I_D = 60A$	$Q_{GS}$		11		nC
Gate to Drain Charge $f = 1MHz, V_{GS} = 10V, V_{DS} = 50V, I_D = 60A$	$Q_{GD}$		12		nC

Turn-on delay time $V_{GS} = 10V, V_{DD} = 50V, I_D = 60A, R_{G\_ext} = 3\Omega$	$t_{d(ON)}$		11		ns
Rise time $V_{GS} = 10V, V_{DD} = 50V, I_D = 60A, R_{G\_ext} = 3\Omega$	$t_r$		28		ns
Turn-off delay time $V_{GS} = 10V, V_{DD} = 50V, I_D = 60A, R_{G\_ext} = 3\Omega$	$t_{d(OFF)}$		37		ns
Fall time $V_{GS} = 10V, V_{DD} = 50V, I_D = 60A, R_{G\_ext} = 3\Omega$	$t_f$		15		ns

### Body Diode

#### ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$ , unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage $V_{GS} = 0V, I_{SD} = 60A$	$V_{SD}$			1.2	V
Diode Forward Current	$I_S$			100	A
Revers Recovery Time $I_F = 40A, di/dt = 100A/\mu s$	$T_{rr}$		55		ns
Revers Recovery Charge $I_F = 40A, di/dt = 100A/\mu s$	$Q_{rr}$		90		nC

Typical Performance Characteristics

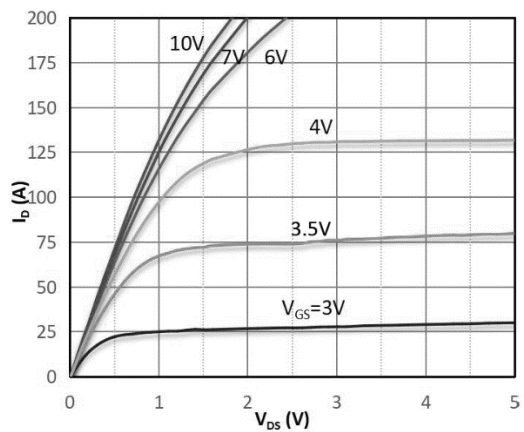


Figure 1. Output Characteristics

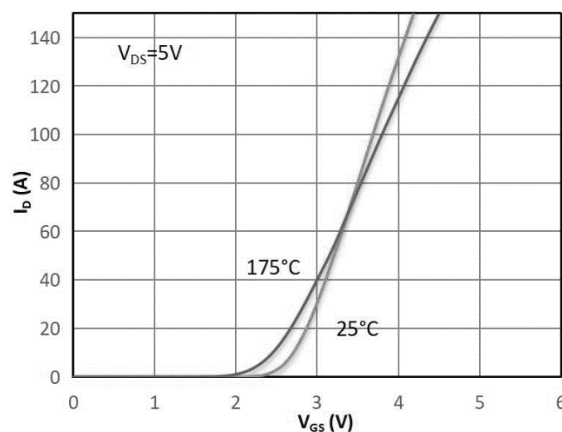


Figure 2. Transfer Characteristics

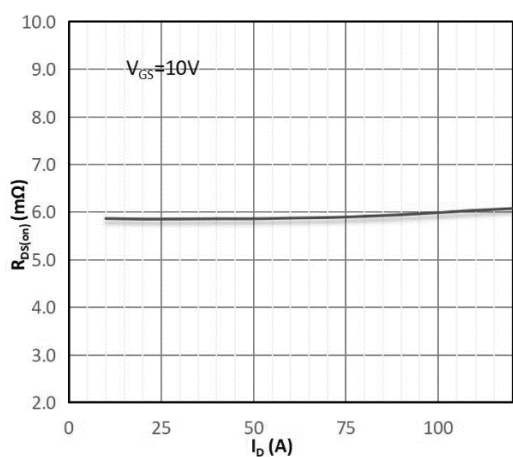


Figure 3.  $R_{ds(on)}$  vs Drain Current

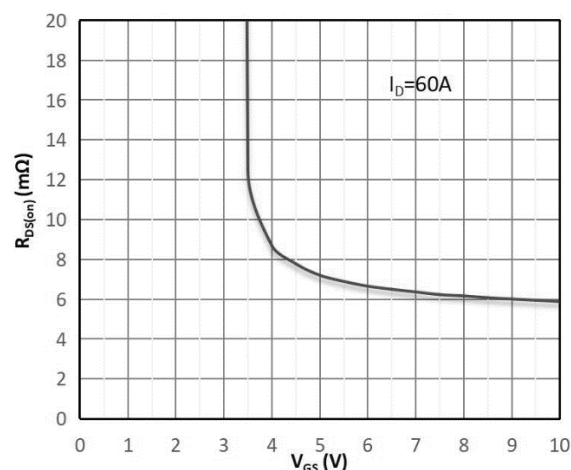


Figure 4.  $R_{ds(on)}$  vs Gate Voltage

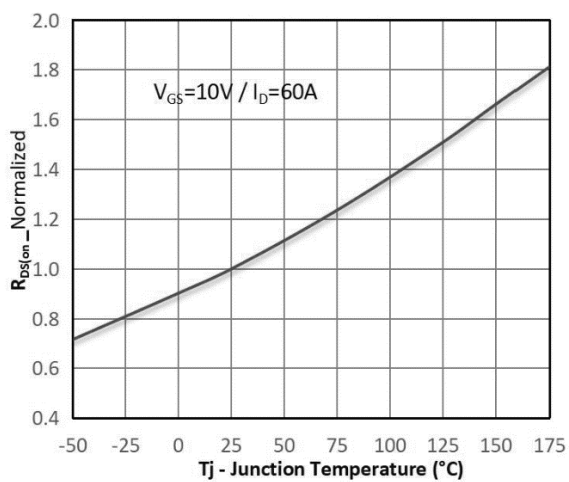


Figure 5.  $R_{ds(on)}$  vs. Temperature

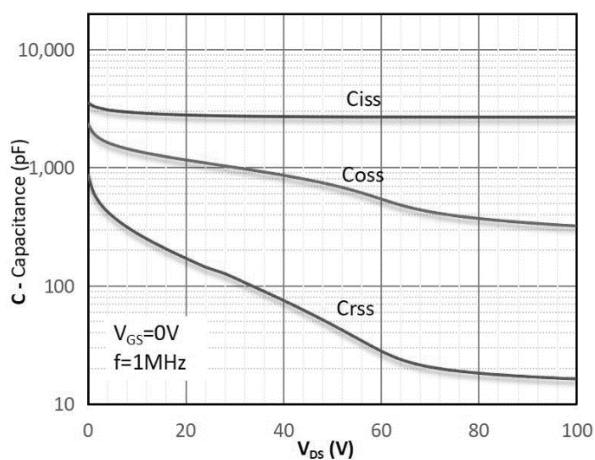


Figure 6. Capacitance Characteristics

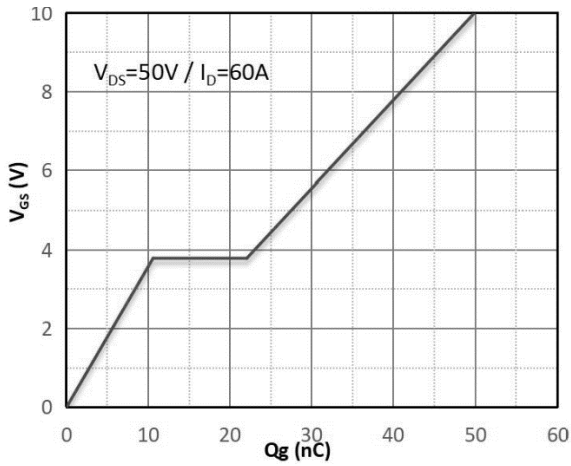


Figure 7. Gate Charge Characteristics

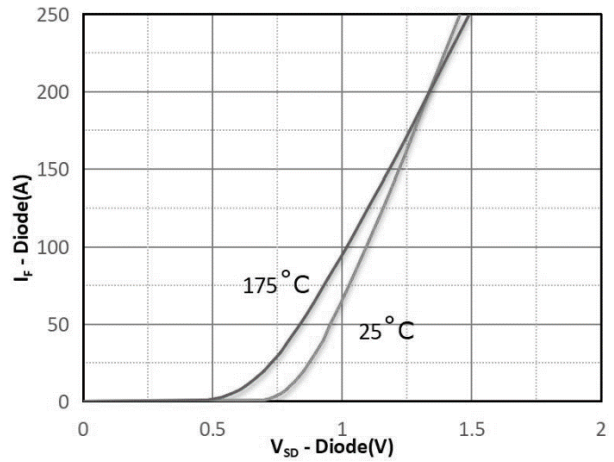


Figure 8. Body-diode Forward Characteristics

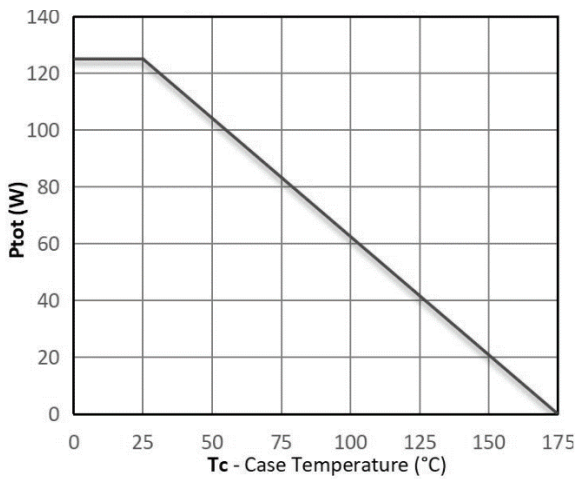


Figure 9. Power De-rating

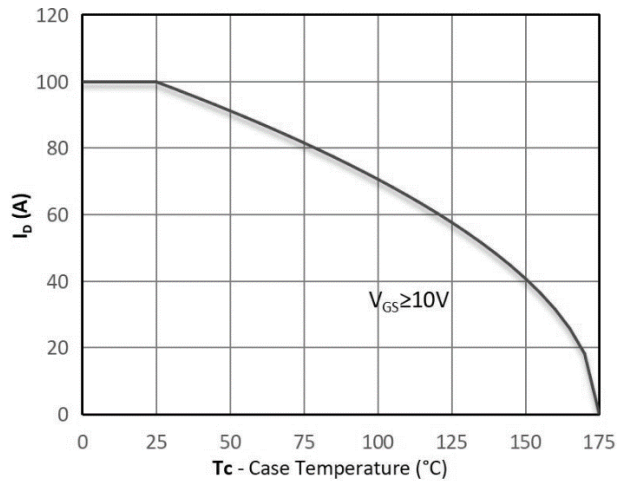


Figure 10. Current De-rating

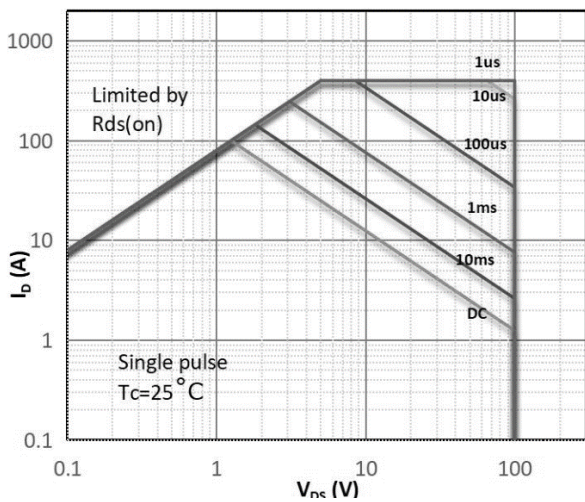


Figure 11. Safe Operating Area

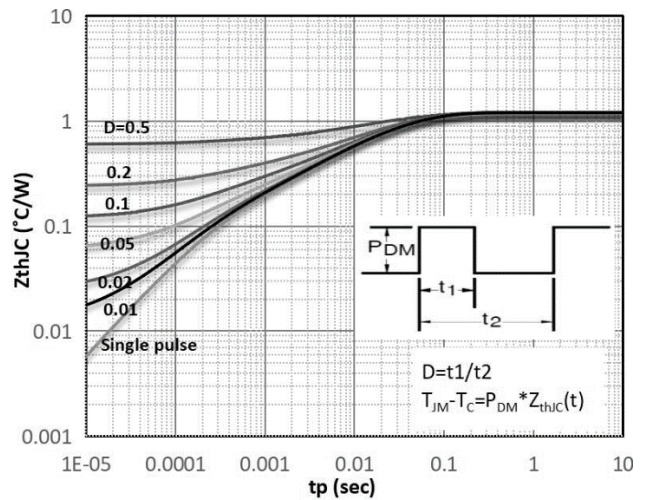
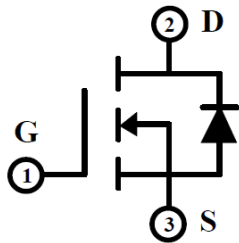
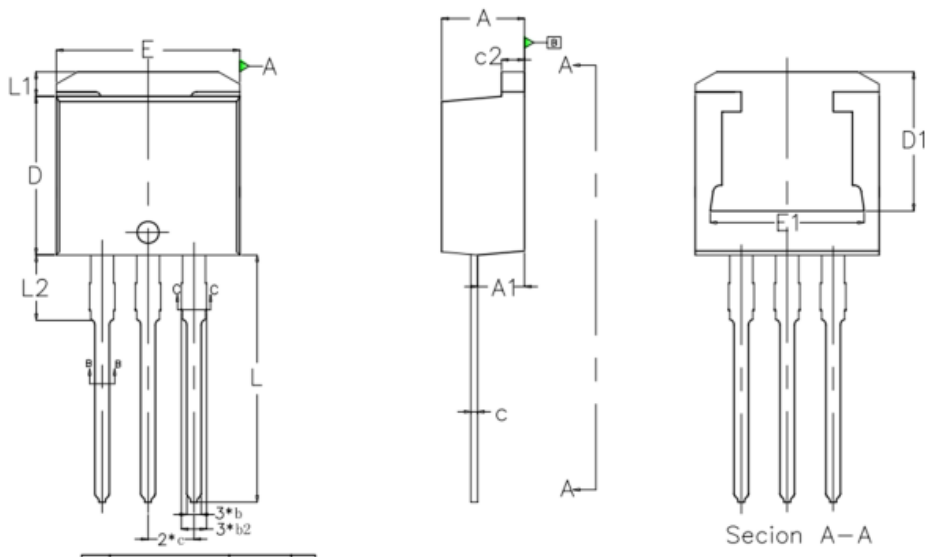


Figure 12. Max. Transient Thermal impedance

·Circuit diagram



·Package outlines Dimensions



SYMBOL	MILLIMETERS			NOTES	SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.			Normal	MIN.	MAX.	
A	4.55	4.44	4.70		D1	7.75	7.50	8.00	
A1	2.60	2.54	2.79		E	10.18	10.00	10.40	
b	0.85	0.7	0.9		E1	8.57	8.25	8.80	
b1	0.83	0.51	0.89		e	2.54	2.54BSC		
b2	1.33	1.20	1.45		L	13.55	13.46	14.00	
b3	1.33	1.20	1.45		L1	1.35	1.00	1.65	
c	0.50	0.38	0.56		L2	3.60	3.56	3.71	
c1	0.48	0.38	0.56						
c2	1.27	1.14	1.40						
D	8.75	8.51	8.89						

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