

**Description**

This  $\pm 30V$  N-Channel and P-Channel complementary Enhancement MOSFET in a PDFN3x3-8L Plastic Package.

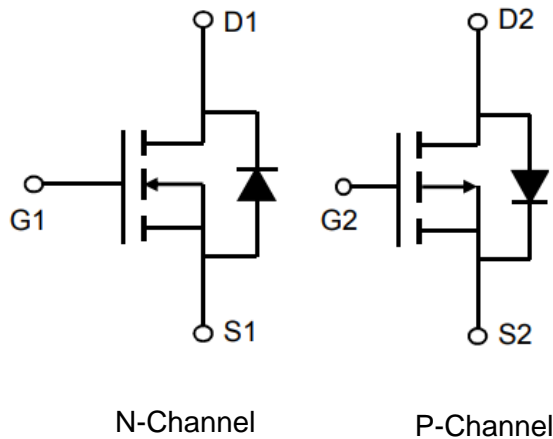
**Applications**

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies. And suitable for use as a load switch or in PWM applications.

**Features**

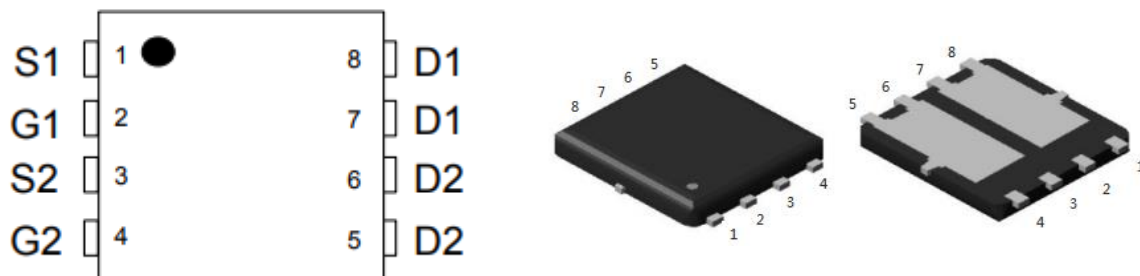
- N-channel
  - $V_{DS}(V)=30V$
  - $I_D=20A$
  - $R_{DS(ON)} < 20m\ \Omega$  ( $V_{GS}=10V$ )
  - $R_{DS(ON)} < 28m\ \Omega$  ( $V_{GS}=4.5V$ )
  - Halogen-free Product.
- P-channel
  - $V_{DS}(V)=-30V$
  - $I_D=12A$
  - $R_{DS(ON)} < 52m\ \Omega$  ( $V_{GS}=10V$ )
  - $R_{DS(ON)} < 73m\ \Omega$  ( $V_{GS}=4.5V$ )
  - Halogen-free Product.

**Equivalent Circuit**



**Pinning**

**Top View**



**Absolute Maximum Ratings(Ta=25°C)**

Parameter	Symbol	Rating		Unit
		N-channe	P-channell	
Drain-Source Voltage	$V_{DSS}$	±30		V
Gate-Source Voltage	$V_{GSS}$	±20		V
Continuous Drain Current	$I_D(T_A=25^\circ\text{C})$	20	12	A
Power Dissipation	$P_D(T_A=25^\circ\text{C})$	11.2	10	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150		°C
Maximum Junction-to-Case	$R_{\theta JC}(\text{Steady-State})$	11.2	12.5	°C/W
Maximum Junction-to-Ambient	$R_{\theta JA}(\text{Steady-State})$	45		°C/W

**N-CHANNEL Electrical Characteristics(Ta=25°C)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	30	35		V	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V$ $V_{GS}=0V$			1.0	$\mu A$	
		$V_{DS}=30V$ $V_{GS}=0V$ $T_J=55^\circ C$			5.0	$\mu A$	
Gate-Body leakage current	$I_{GSS}$	$V_{GS}=\pm 20V$ $V_{DS}=0V$			100	nA	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.0	1.6	2.5	V	
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=6.9A$		20	25	m $\Omega$	
		$V_{GS}=4.5V$ $I_D=5.0A$		28	40	m $\Omega$	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=1.0A$		0.78	1.2	V	
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		690		pF	
Output Capacitance	$C_{oss}$			200		pF	
Reverse Transfer Capacitance	$C_{rss}$			130		pF	
Gate resistance	$R_g$	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		2.7		$\Omega$	
Total Gate Charge(10V)	$Q_g$	$V_{GS}=10V$ $V_{DS}=15V$ $I_D=6A$		5.2		nC	
Total Gate Charge(4.5V)				2.5		nC	
Gate-Source Charge			$Q_{gs}$		0.8		nC
Gate-Drain Charge			$Q_{gd}$		1.3		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=2.5\Omega$ $R_{GEN}=3\Omega$		4.5		ns	
Turn-On Rise Time	$t_r$			2.5		ns	
Turn-Off Delay Time	$t_{d(off)}$			14.5		ns	
Turn-Off Fall Time	$t_f$			3.5		ns	

N-CHANNEL Electrical Characteristic Curve

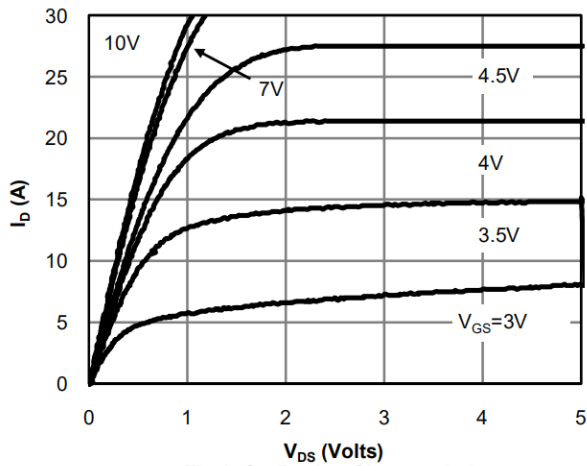


Fig 1: On-Region Characteristics

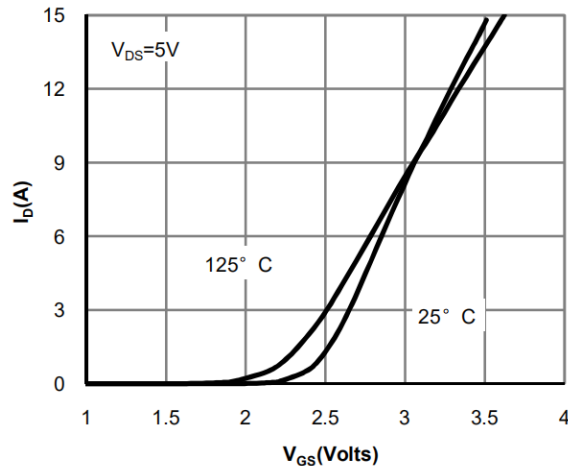


Figure 2: Transfer Characteristics

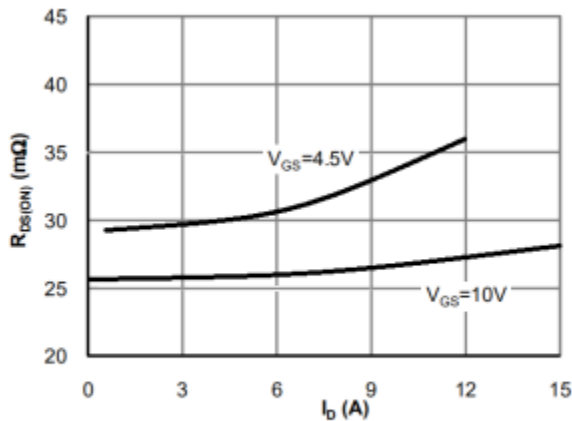


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

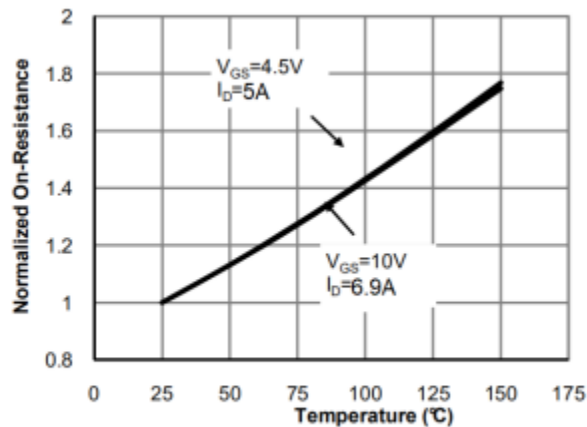


Figure 4: On-Resistance vs. Junction Temperature

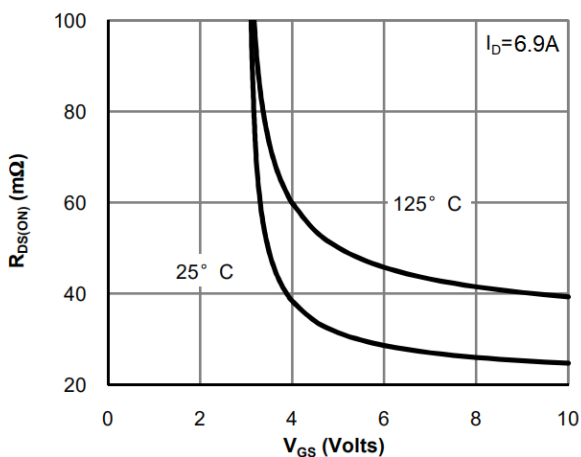


Figure 5: On-Resistance vs. Gate-Source Voltage

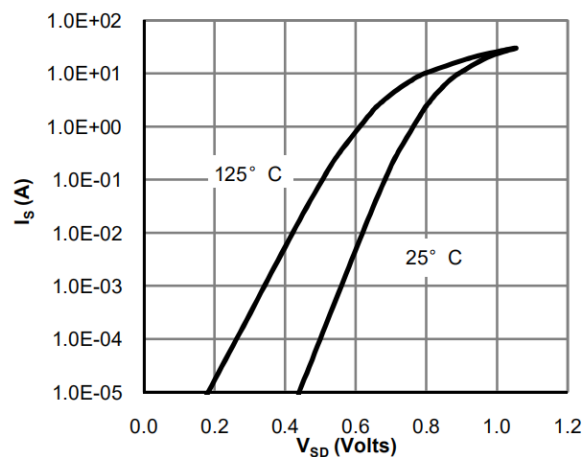


Figure 6: Body-Diode Characteristics

N-CHANNEL Electrical Characteristic Curve

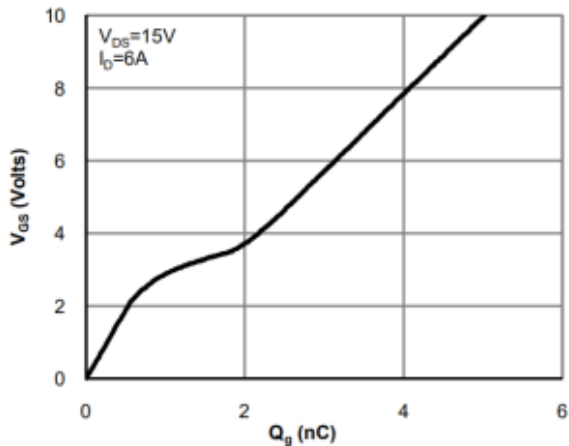


Figure 7: Gate-Charge Characteristics

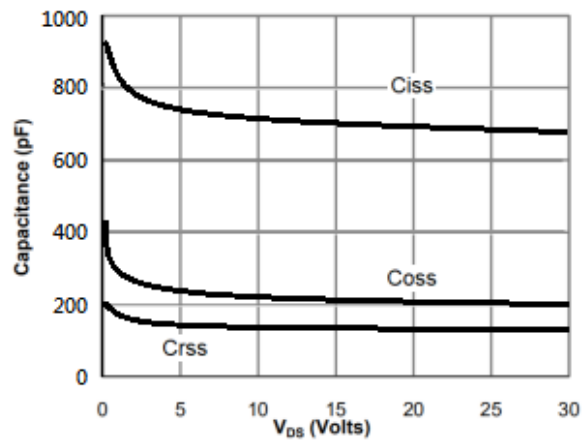


Figure 8: Capacitance Characteristics

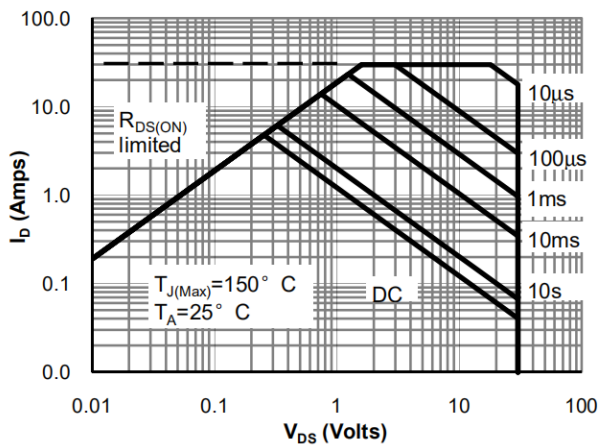


Figure 9: Maximum Forward Biased Safe Operating Area

**P-CHANNEL Electrical Characteristics(Ta=25°C)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=-250\mu A$	-30	-34		V	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V$ $V_{GS}=0V$			-1.0	$\mu A$	
		$V_{DS}=-30V$ $V_{GS}=0V$ $T_J=55^\circ C$			-5.0	$\mu A$	
Gate-Body leakage current	$I_{GSS}$	$V_{GS}=\pm 20V$ $V_{DS}=0V$			$\pm 100$	nA	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu A$	-1.0	-1.85	-2.5	V	
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V$ $I_D=-6.0A$		52	60	m $\Omega$	
		$V_{GS}=-4.5V$ $I_D=-5.0A$		73	85	m $\Omega$	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=-1.0A$		-0.81	-1.2	V	
Input Capacitance	$C_{iss}$	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0MHz$		900		pF	
Output Capacitance	$C_{oss}$			235		pF	
Reverse Transfer Capacitance	$C_{rss}$			195		pF	
Gate resistance	$R_g$	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		26		$\Omega$	
Total Gate Charge(10V)	$Q_g$	$V_{GS}=-10V$ $V_{DS}=-15V$ $I_D=-6.5A$		13.6		nC	
Total Gate Charge(4.5V)				6.7		nC	
Gate-Source Charge			$Q_{gs}$		2.5		nC
Gate-Drain Charge			$Q_{gd}$		3.2		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-15V$ $V_{GS}=-10V$ $R_L=2.3\Omega$ $R_{GEN}=3\Omega$		8		ns	
Turn-On Rise Time	$t_r$			6		ns	
Turn-Off Delay Time	$t_{d(off)}$			17		ns	
Turn-Off Fall Time	$t_f$			5		ns	

P-CHANNEL Electrical Characteristic Curve

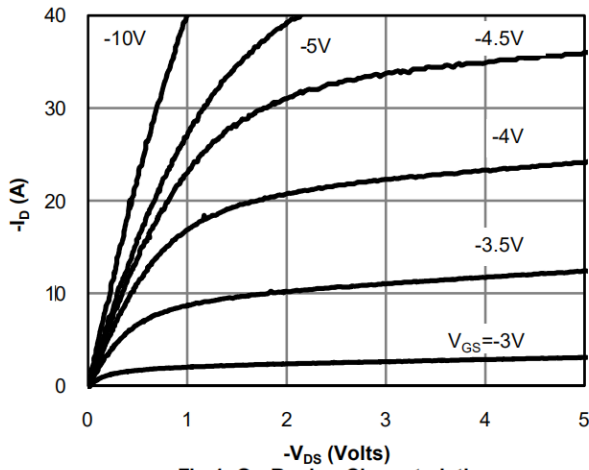


Fig 1: On-Region Characteristics

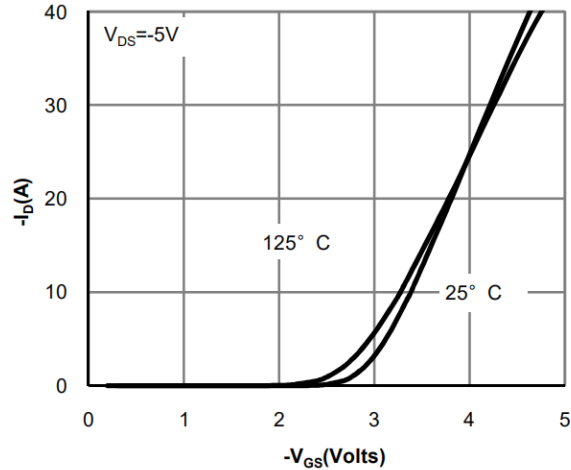


Figure 2: Transfer Characteristics

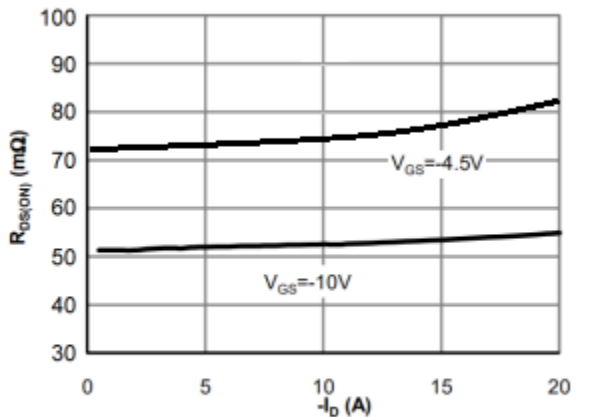


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

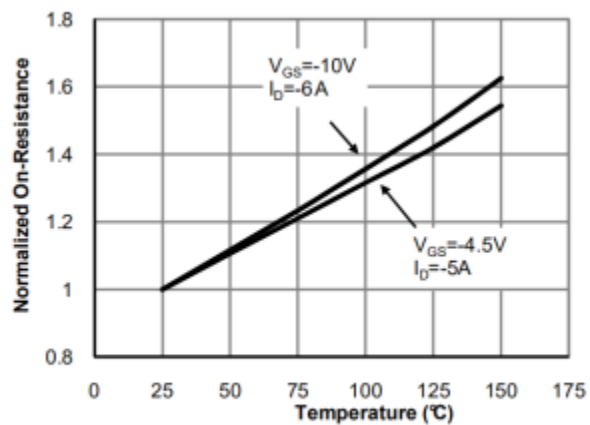


Figure 4: On-Resistance vs. Junction Temperature

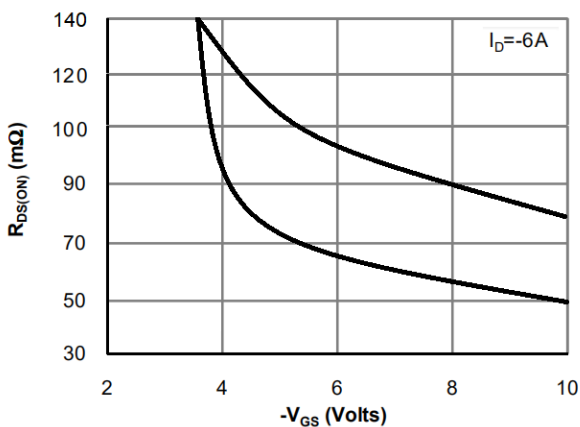


Figure 5: On-Resistance vs. Gate-Source Voltage

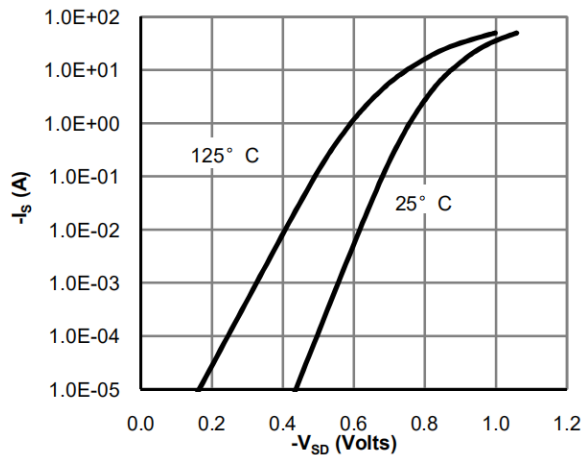
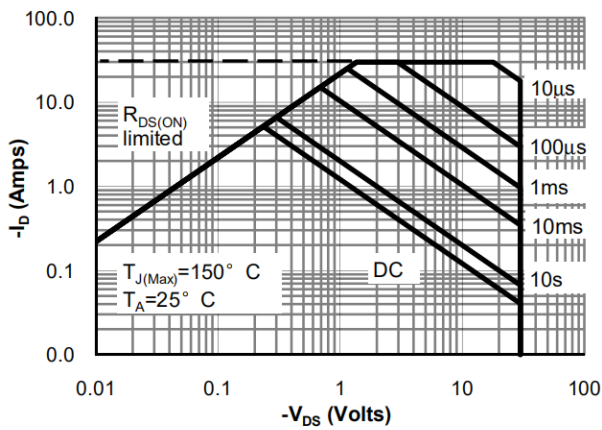
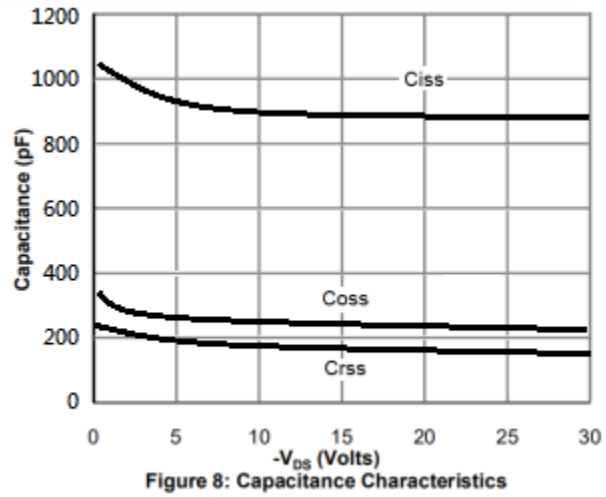
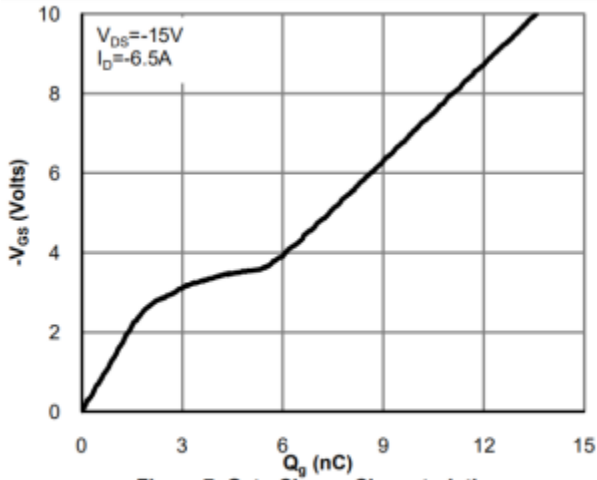


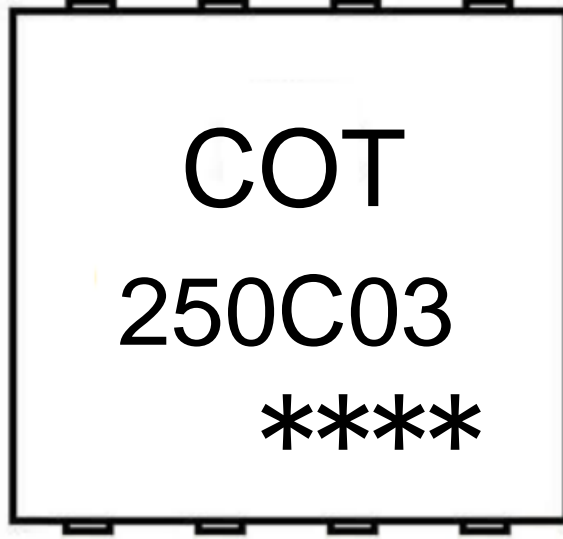
Figure 6: Body-Diode Characteristics

P-CHANNEL Electrical Characteristic Curve





Marking Instructions



Note:

COT: Company Logo

250C03: Product Type.

\*\*\*\*: Lot No. Code, code change with Lot No.

Packaging SPEC.

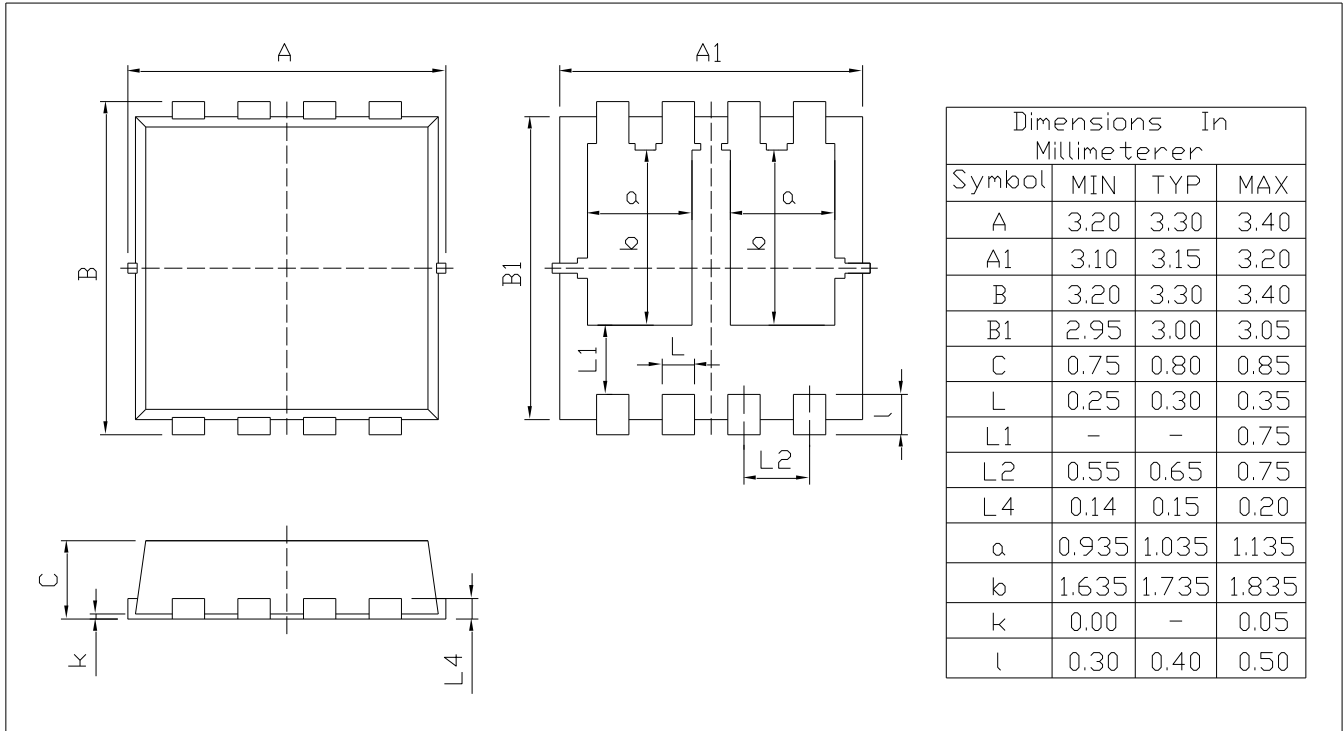
REEL INFORMATION

Package Type	Units					Dimension (unit: mm <sup>3</sup> )		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
PDFN3×3-8L	5,000	2	10,000	6	60,000	13" ×12	360×360×50	380×335×366

Package Outline Dimensions

PDFN3X3-8L

Unit:mm



Rev.00 202011